

KIC 007023960

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
007023960-01	OBS	0187.01	30.882538	151.529495	24071.9	5.395	1235.1	1143.4	0.99	6014	15.46	29.19
007023960-02	OBS	No	30.882676	156.124733	301.1	5.981	16.7	16.9	0.99	6014	2.04	29.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007023960-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
007023960-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

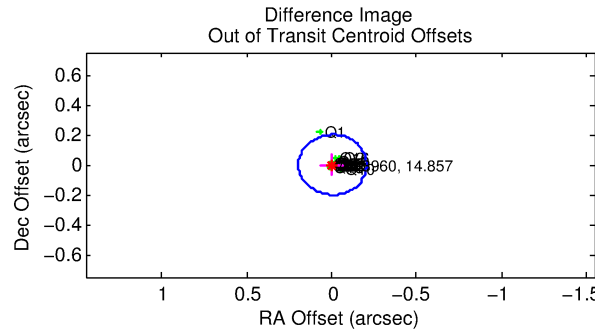
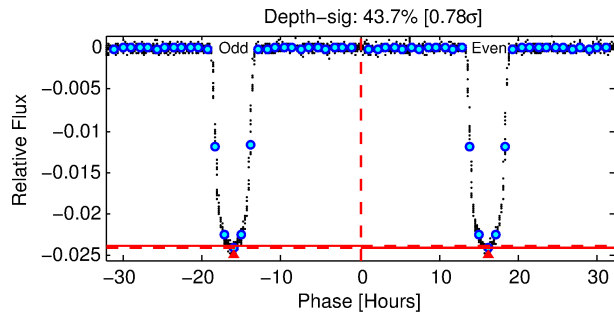
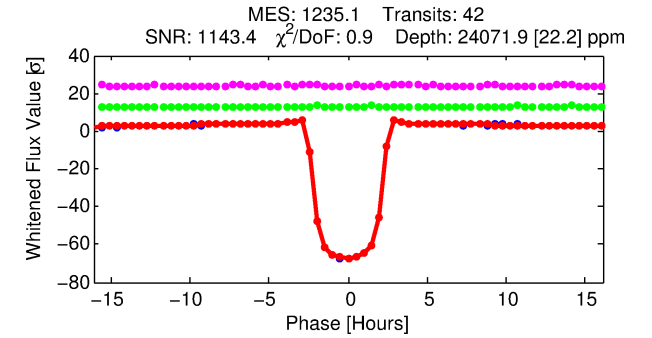
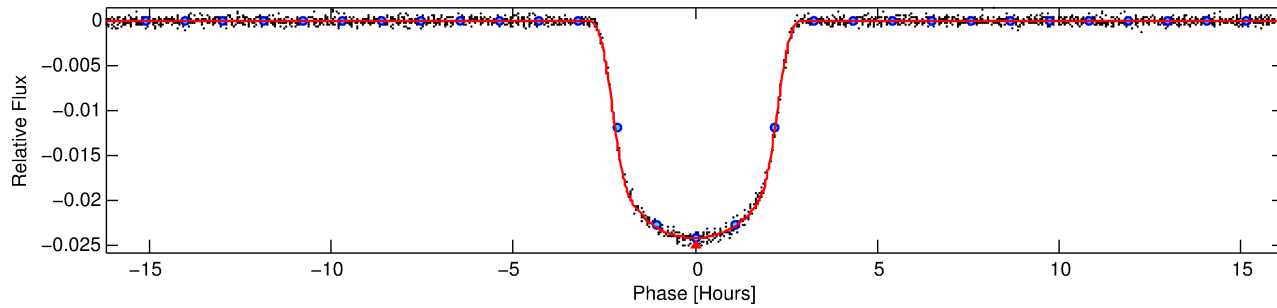
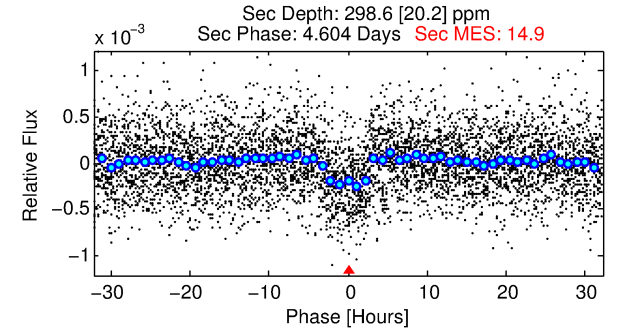
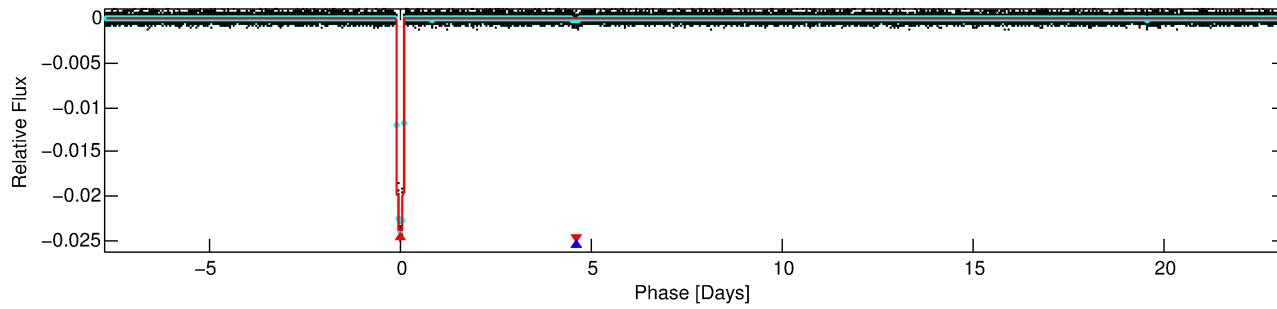
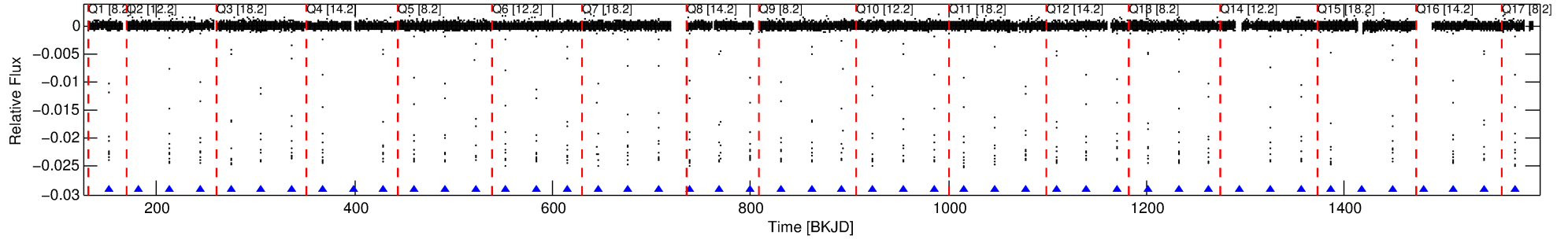
Ephemeris Match Information For 007023960-01

No Significant Match Found

DV One-Page Summary

KIC: 7023960 Candidate: 1 of 2 Period: 30.883 d
KOI: K00187.01 Corr: 0.998

Kp: 14.86 R*: 0.99 Rs Teff: 6014.0 K Logg: 4.49 Fe/H: 0.070



DV Fit Results:

Period = 30.88254 [0.00000] d
Epoch = 151.5295 [0.0001] BKJD
Rp/R* = 0.1427 [0.0002]
a/R* = 48.56 [0.29]
b = 0.27 [0.02]
Seff = 29.19 [11.55]
Teq = 593 [59] K
Rp = 15.46 [4.70] Re
a = 0.1990 [0.0510] AU
Ag = 27.22 [10.32] [2.54σ]
Teffp = 2093 [78] K [15.40σ]

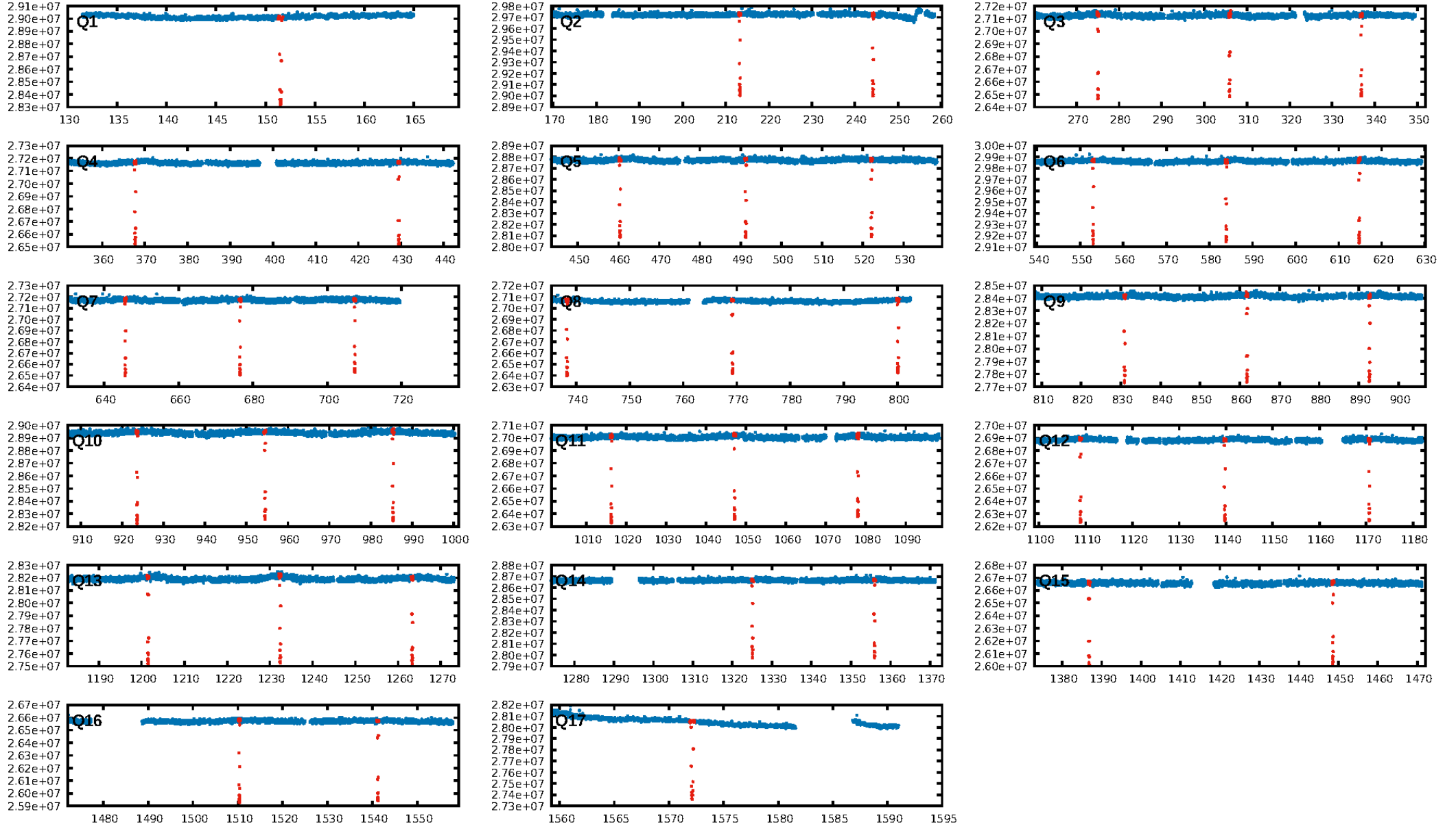
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [40/40]
GhostDiagnostic-chr: 5.246
Centroid-sig: 0.0%
Centroid-so: 0.131 arcsec [12.16σ]
OotOffset-rm: 0.005 arcsec [0.07σ]
KicOffset-rm: 0.068 arcsec [1.00σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

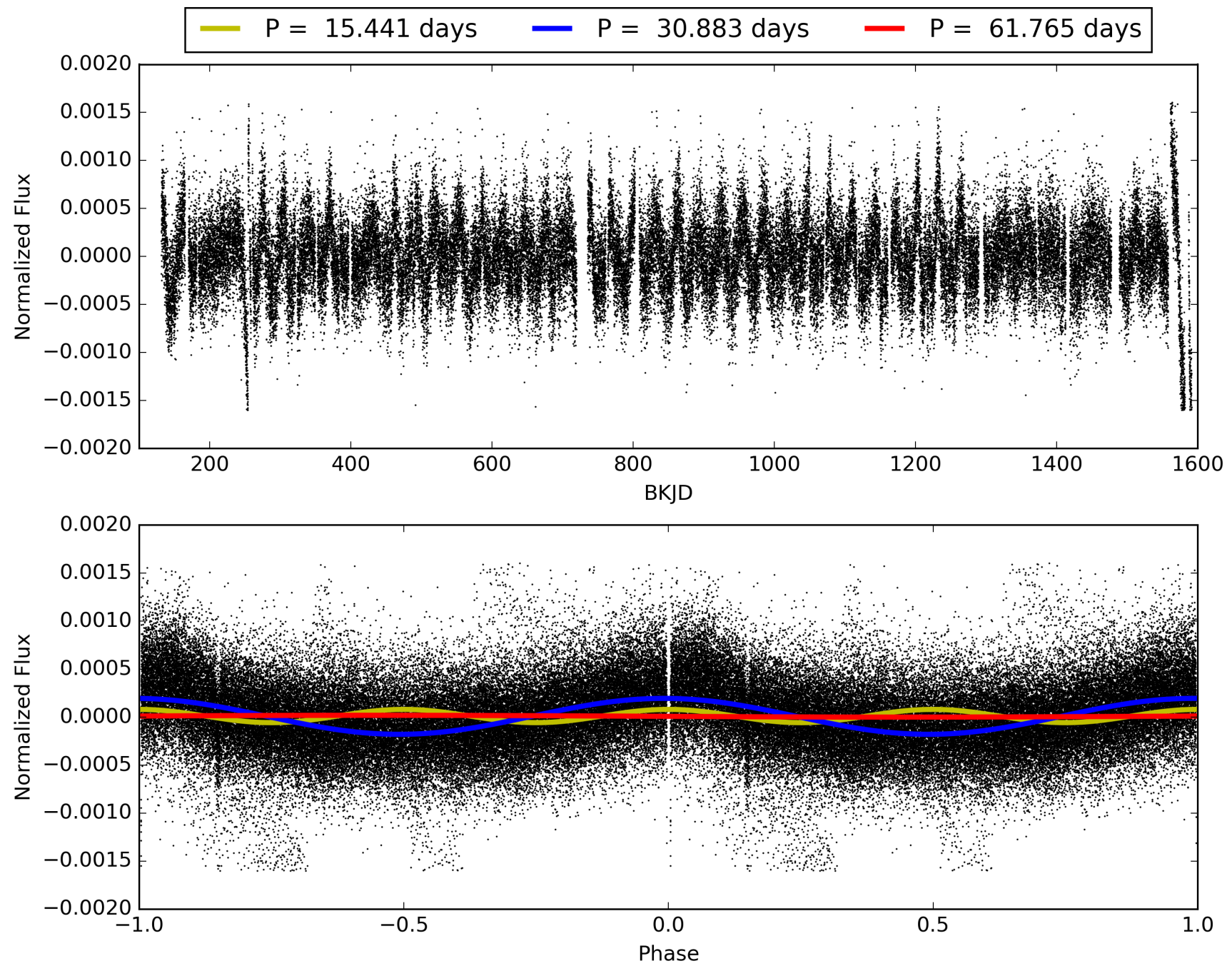
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:59:04 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 007023960-01, PDC Light Curves

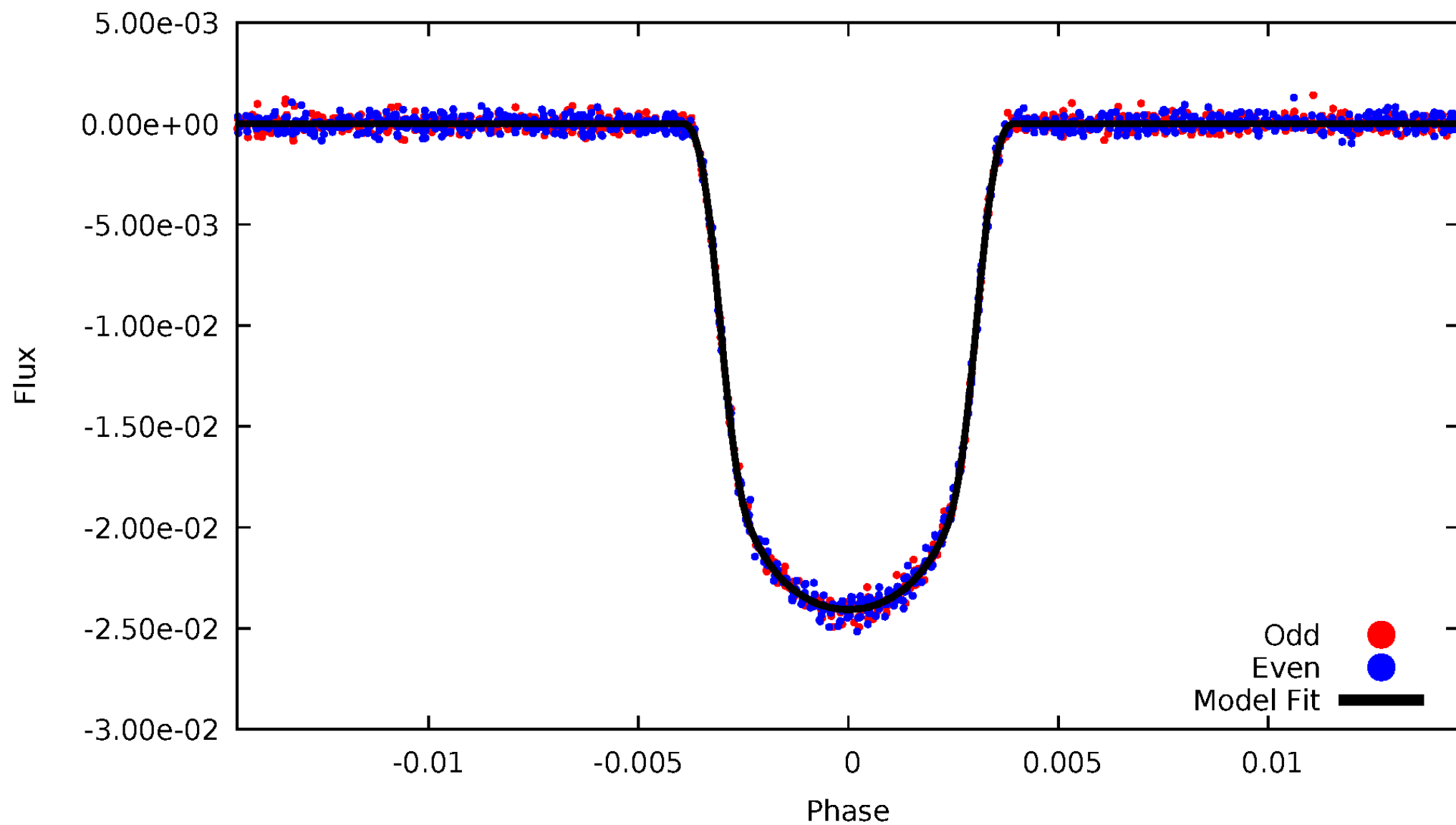


TCE 007023960-01



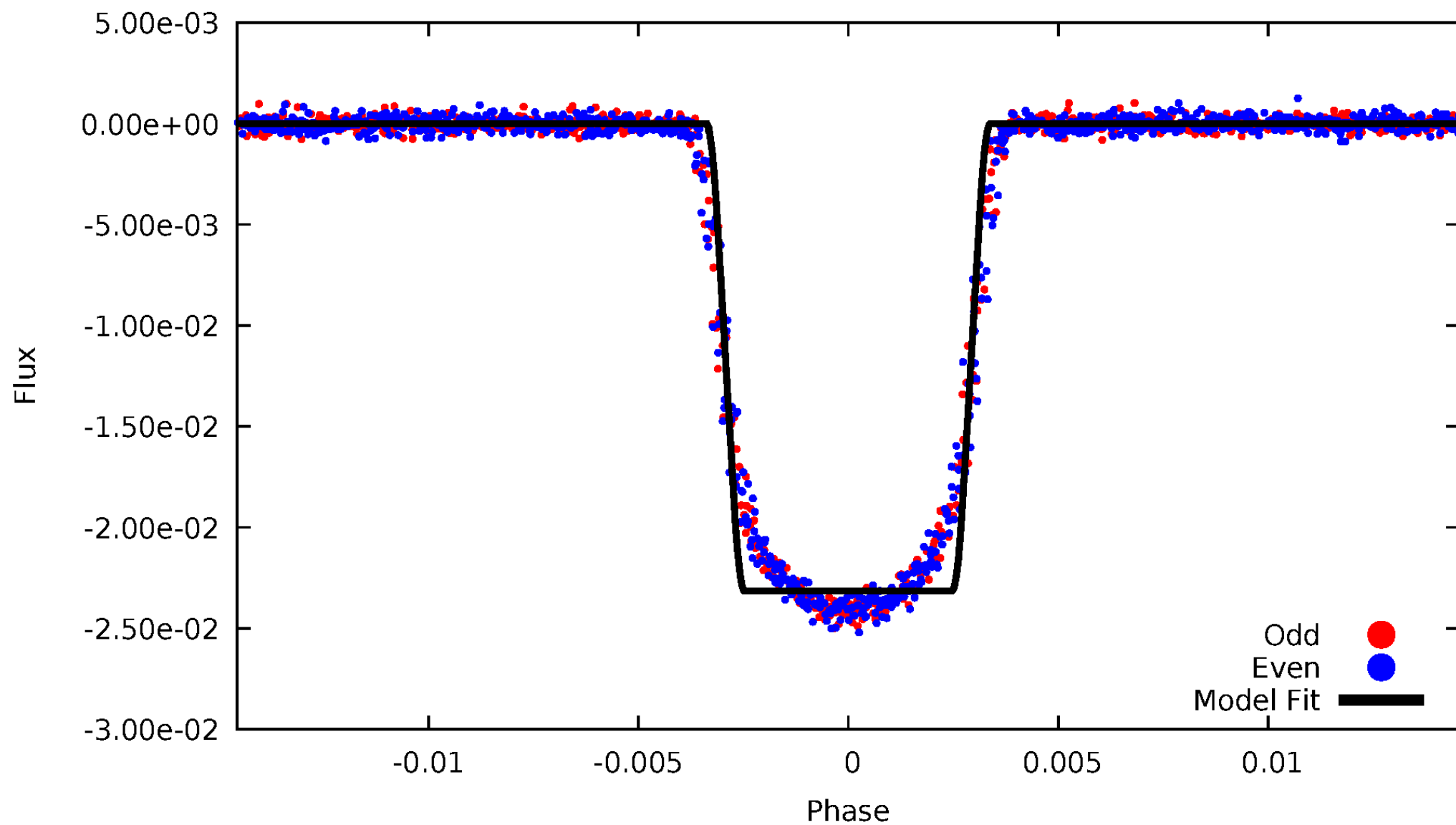
DV Odd/Even

TCE 007023960-01



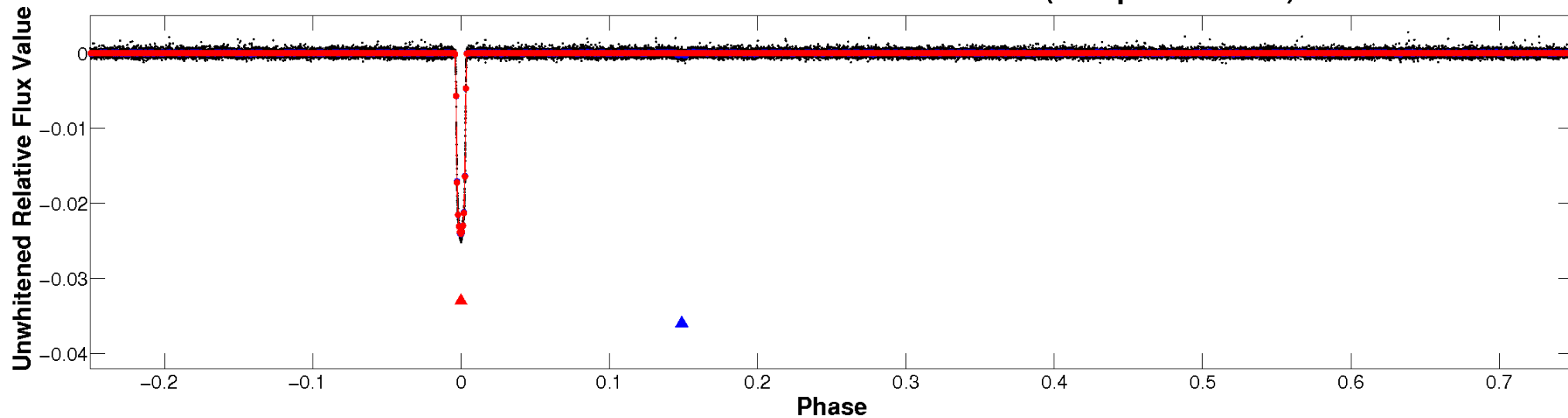
ALT Odd/Even

TCE 007023960-01

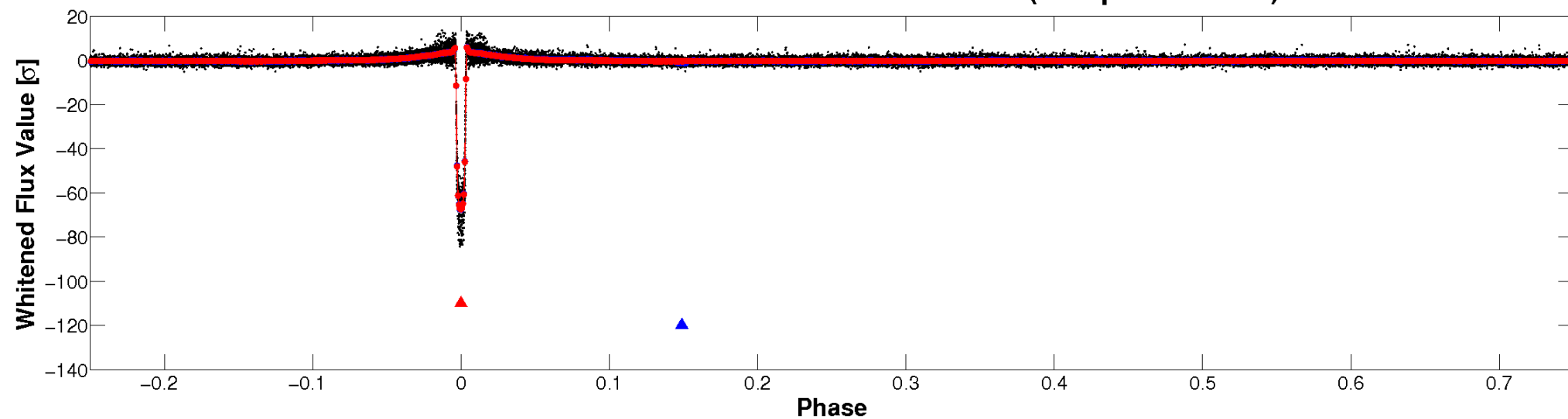


Non-Whitened Vs. Whitened Light Curve

Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

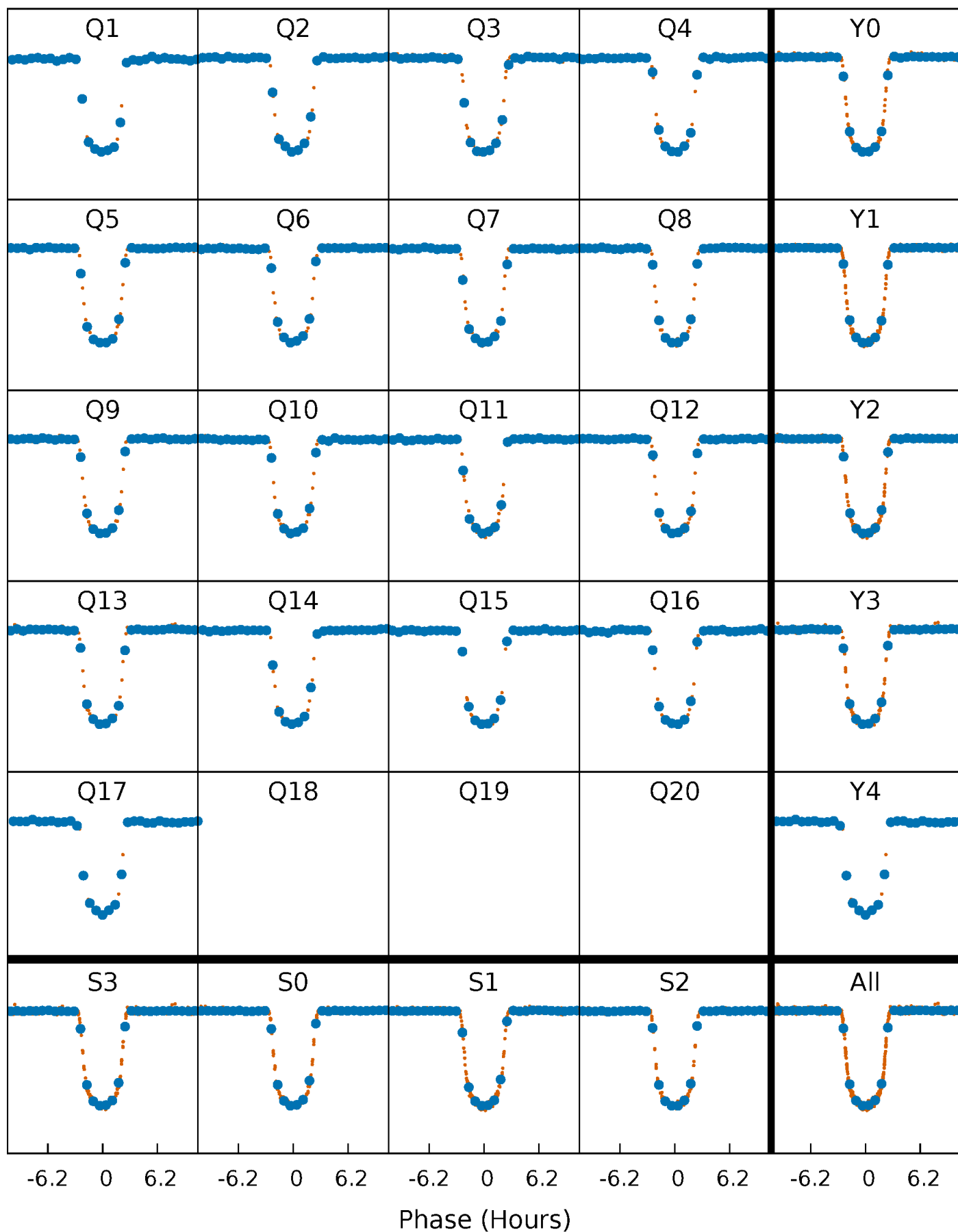


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



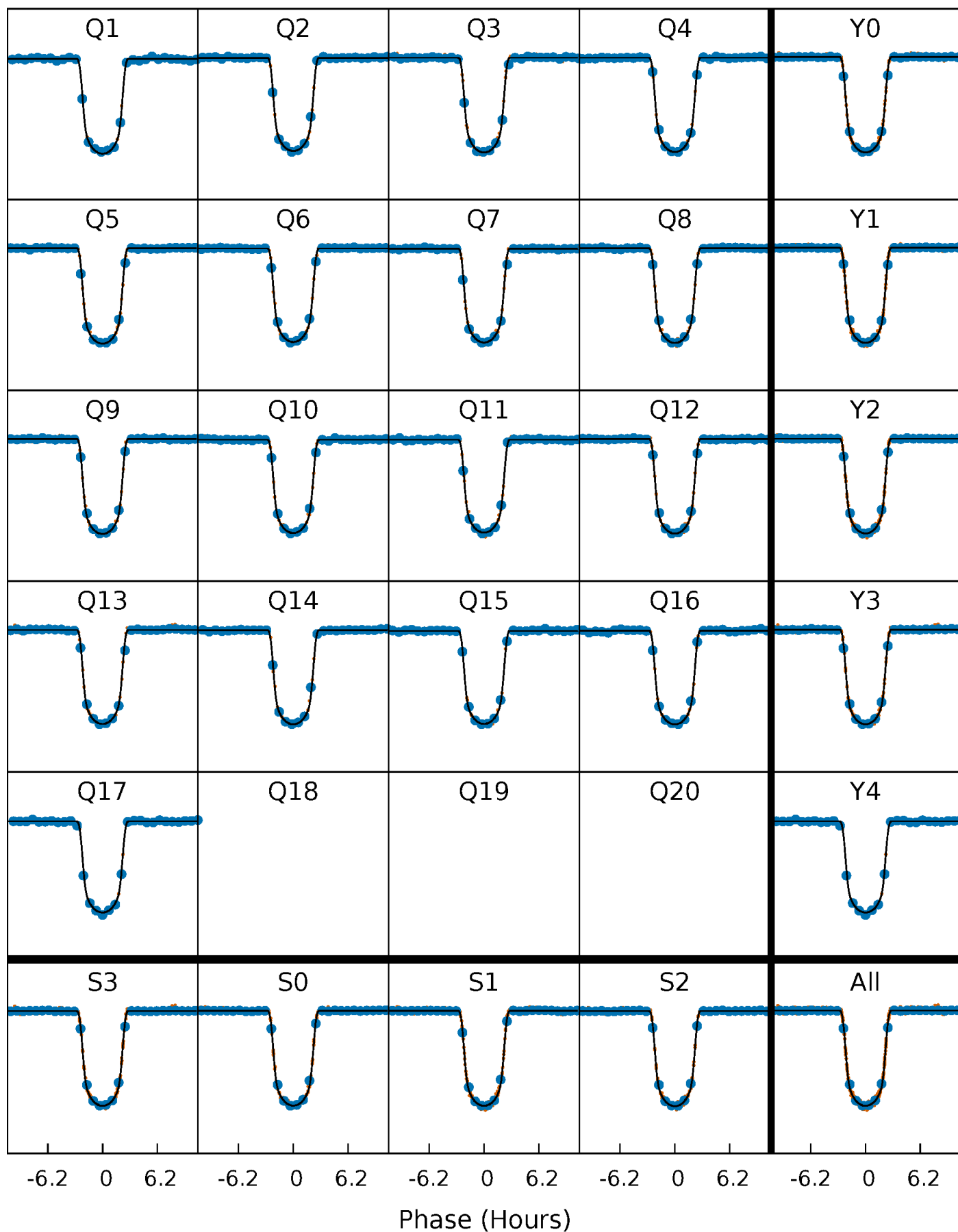
PDC Quarter-Phased Transit Curves

TCE 007023960-01 P= 30.882538 Days $T_0=151.529495$ (BKJD)



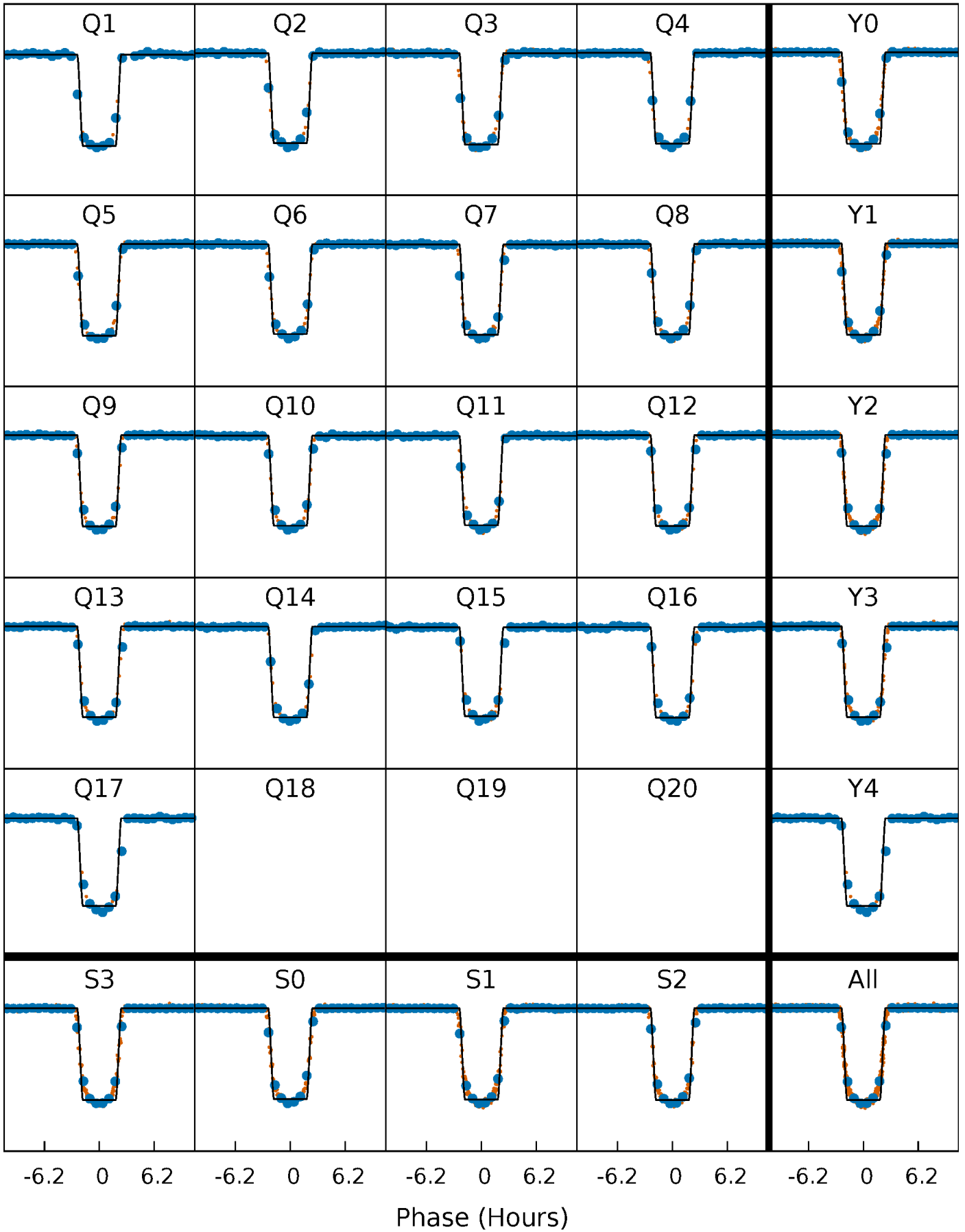
DV Quarter-Phased Transit Curves

TCE 007023960-01 P= 30.882538 Days $T_0=151.529495$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

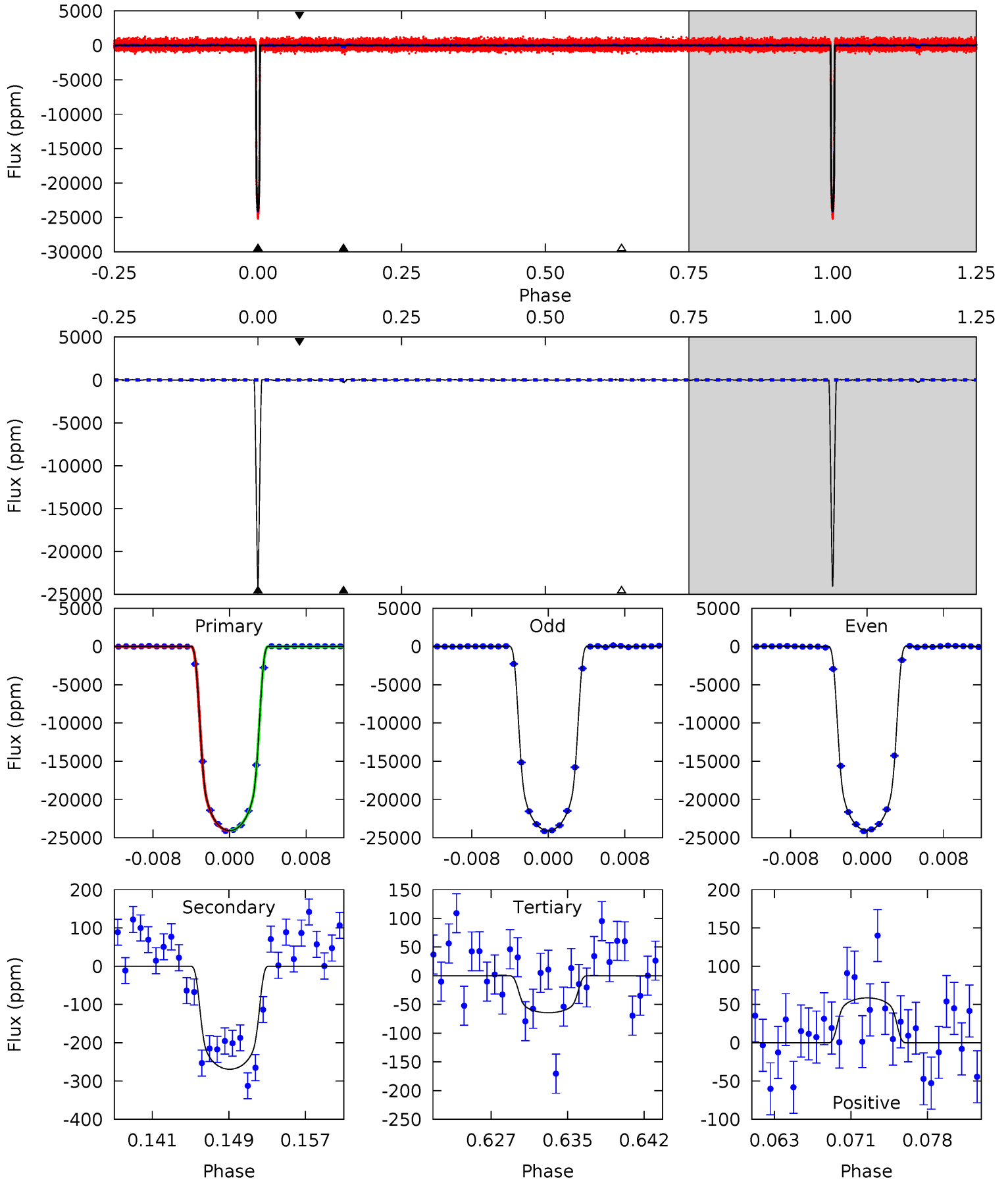
TCE 007023960-01 P= 30.882267 Days $T_0=151.535645$ (BKJD)



DV Model-Shift Uniqueness Test

007023960-01, P = 30.882538 Days, E = 120.646957 Days

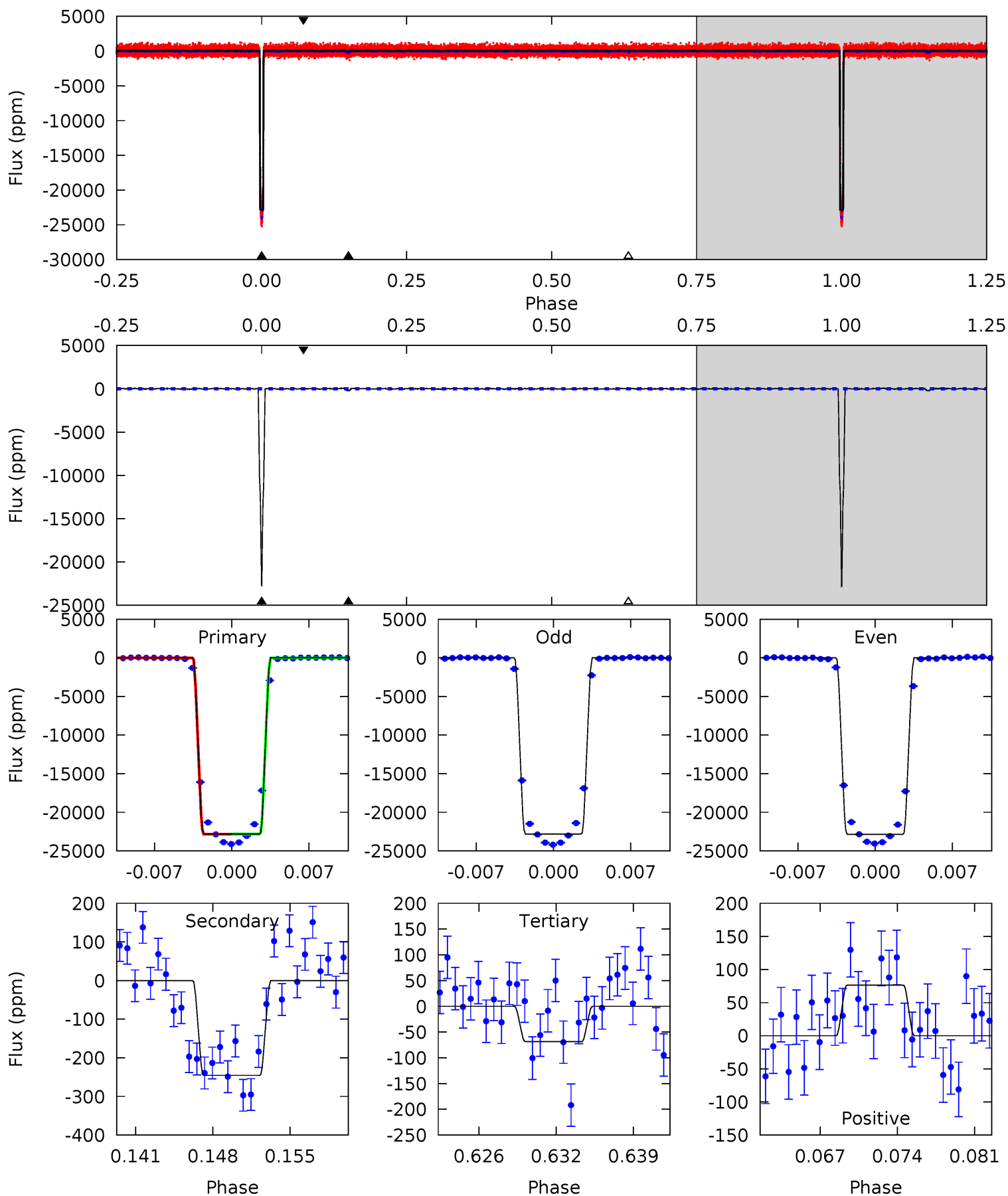
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1760	19.7	4.71	4.29	5.07	2.66	1.38	1755	1756	15.0	15.4	0.97	1.00	0.00	1.94



Alt Model-Shift Uniqueness Test

007023960-01, P = 30.882267 Days, E = 120.653378 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1363	14.7	4.11	4.56	5.10	2.71	1.12	1359	1358	10.6	10.1	0.69	1.00	0.00	0.04



Stellar Parameters For KIC 007023960

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6014^{+163}_{-199}	$4.486^{+0.048}_{-0.204}$	$0.070^{+0.250}_{-0.300}$	$0.993^{+0.302}_{-0.101}$	$1.101^{+0.120}_{-0.147}$	$1.584^{+0.325}_{-0.838}$
	+3%/-3%	+1%/-5%	+357%/-429%	+30%/-10%	+11%/-13%	+21%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 007023960-01 / KOI 0187.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-269 ± 14	$15.99^{+2.63}_{-1.34}$	847^{+56}_{-41}	2784^{+44}_{-53}	23^{+4}_{-6}
Alt.	-246 ± 17	$16.89^{+2.73}_{-1.23}$	845^{+58}_{-37}	2701^{+49}_{-48}	18^{+3}_{-4}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming A=0.3)

A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

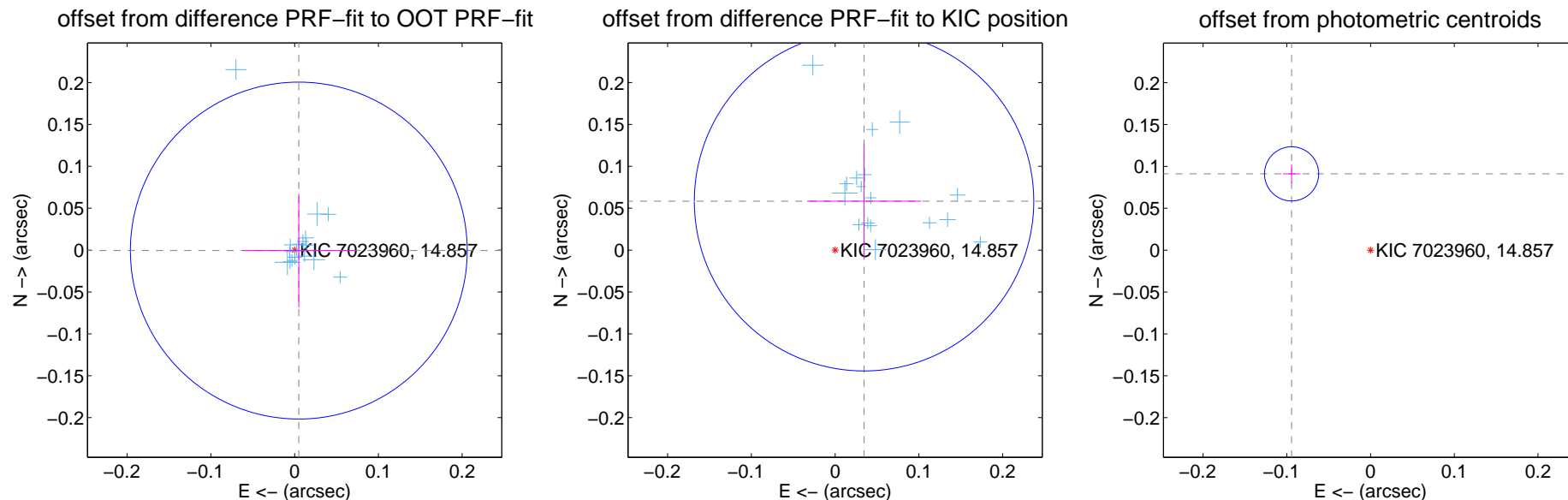
DV Centroid Data

Supplemental centroid analysis for 007023960-01. Kepler magnitude: 14.86. Transit SNR 1143.42

There are 17 quarters with good PRF difference image offsets

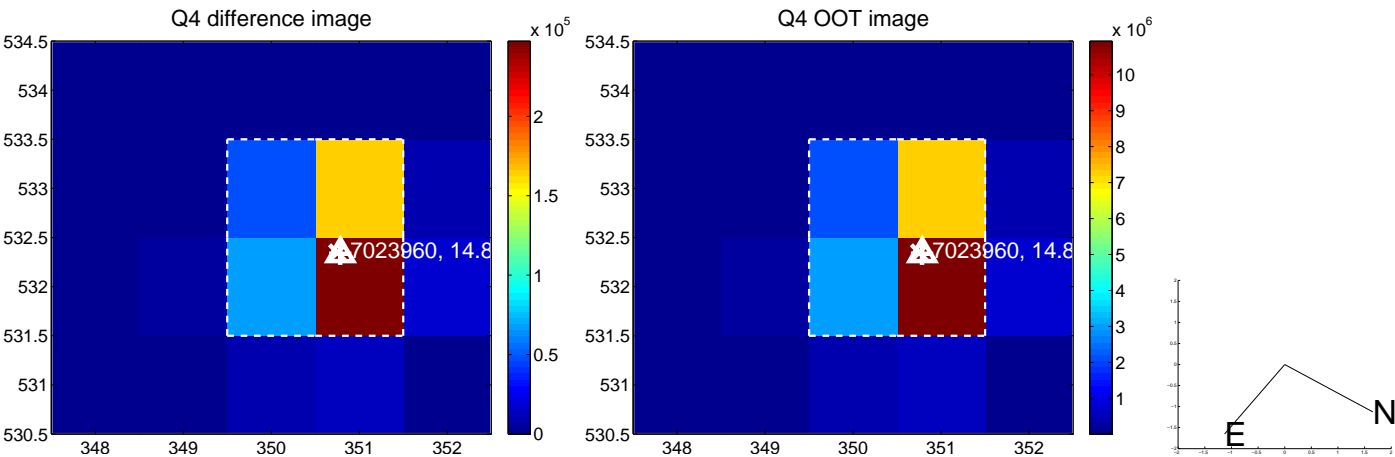
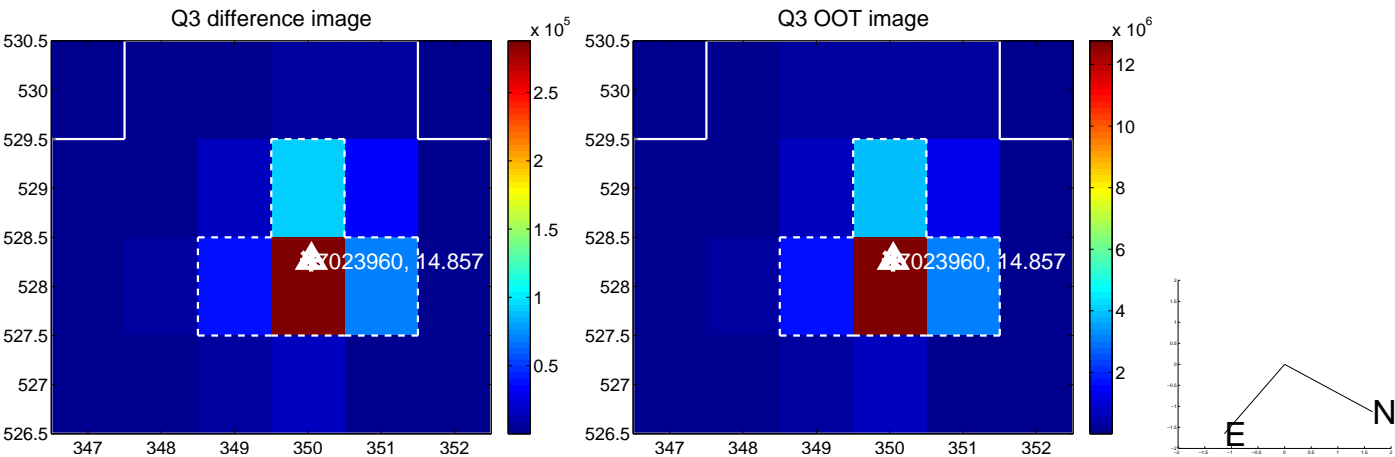
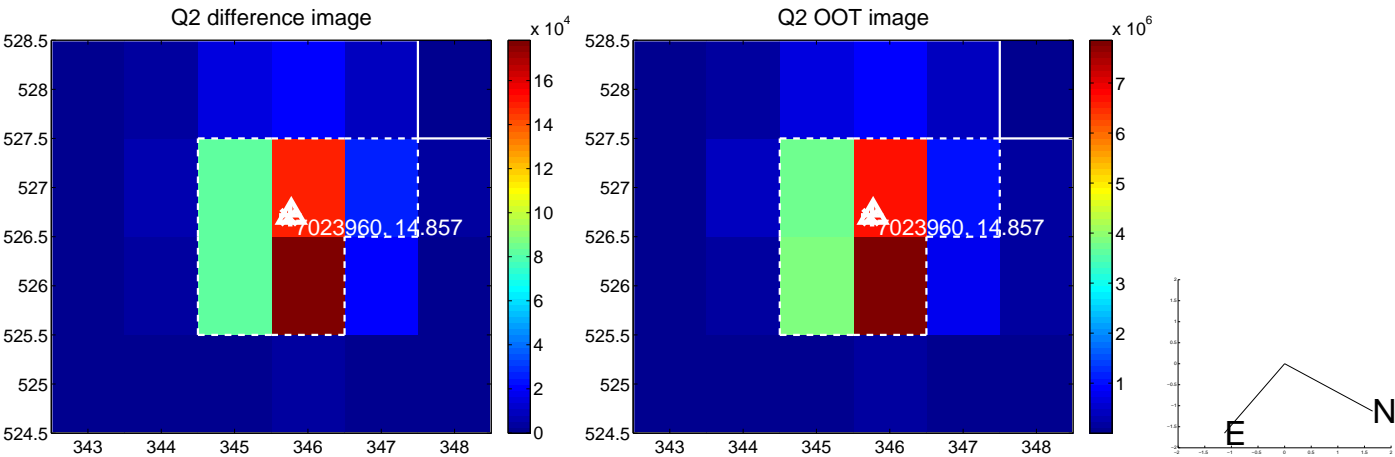
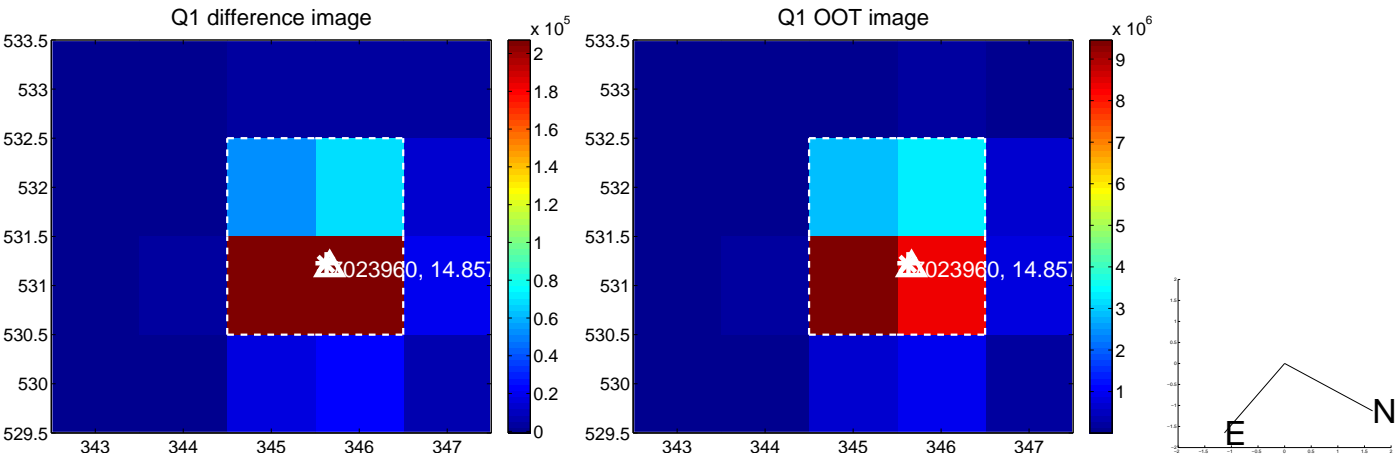
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.005 ± 0.067	0.07	-0.005 ± 0.067	-0.001 ± 0.068
PRF-fit source offset from KIC position	0.068 ± 0.068	1.00	-0.035 ± 0.068	0.058 ± 0.068
photometric centroid source offset	0.13 ± 0.01	12.16	0.09 ± 0.01	0.09 ± 0.01

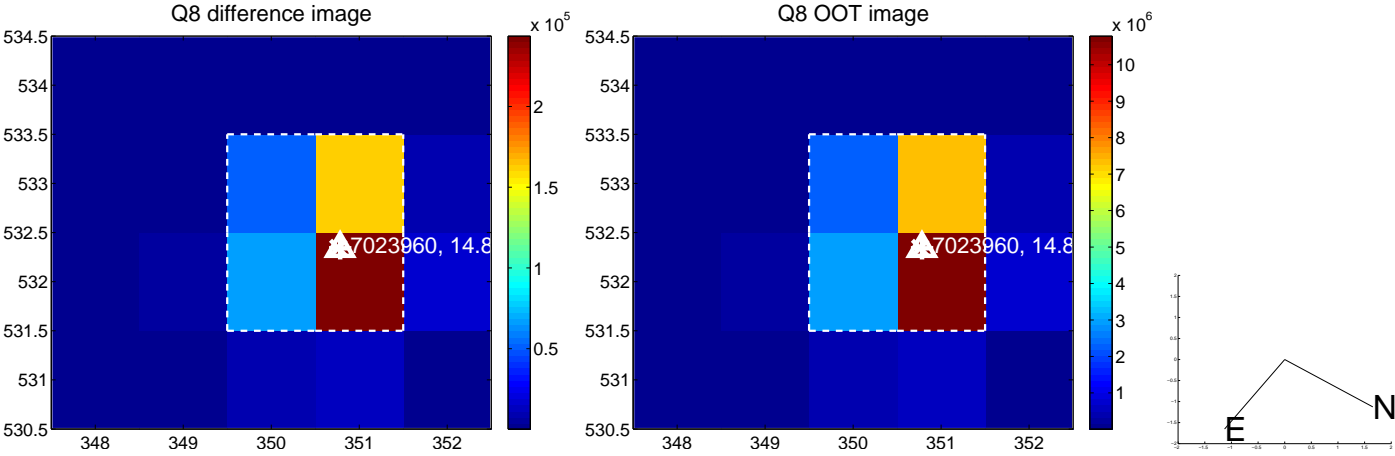
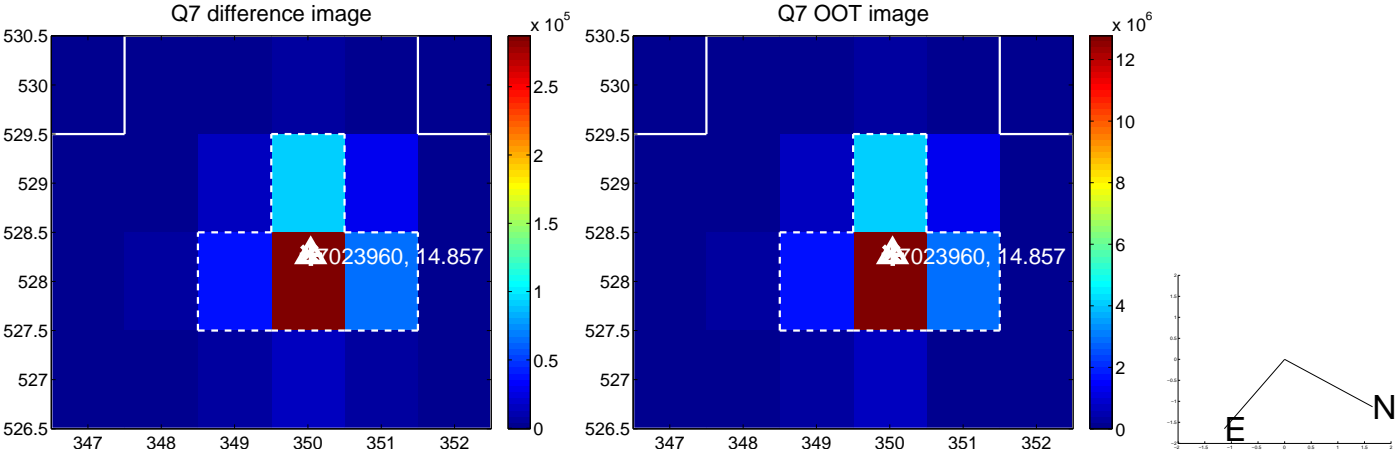
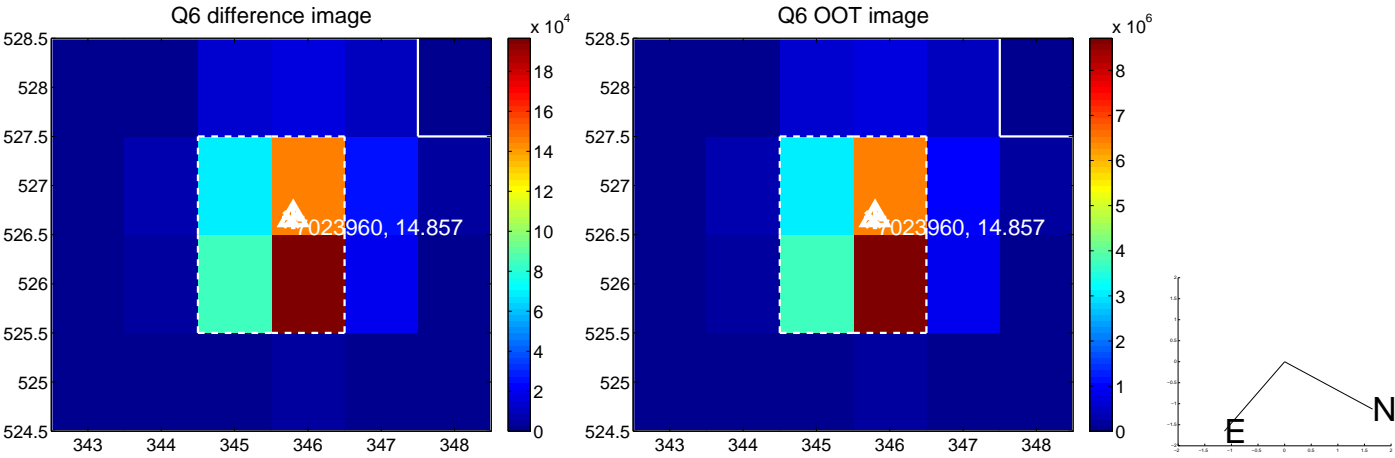
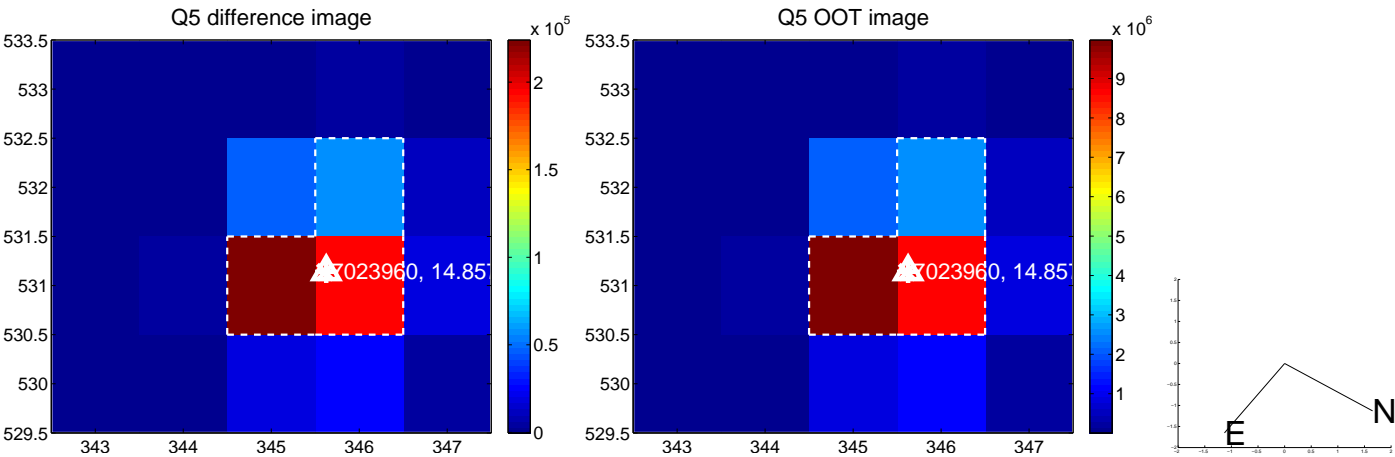


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

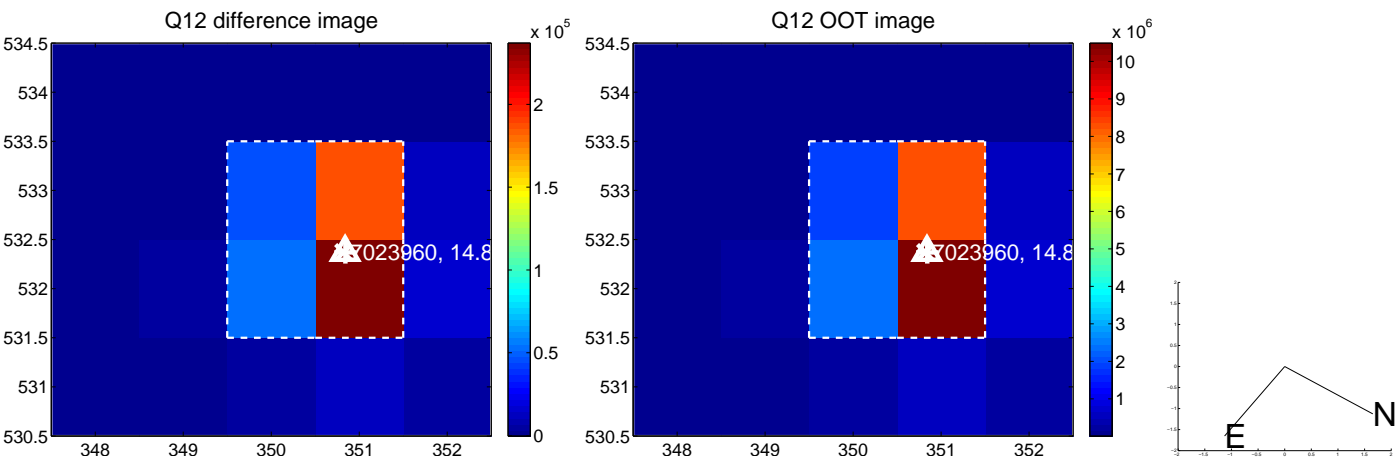
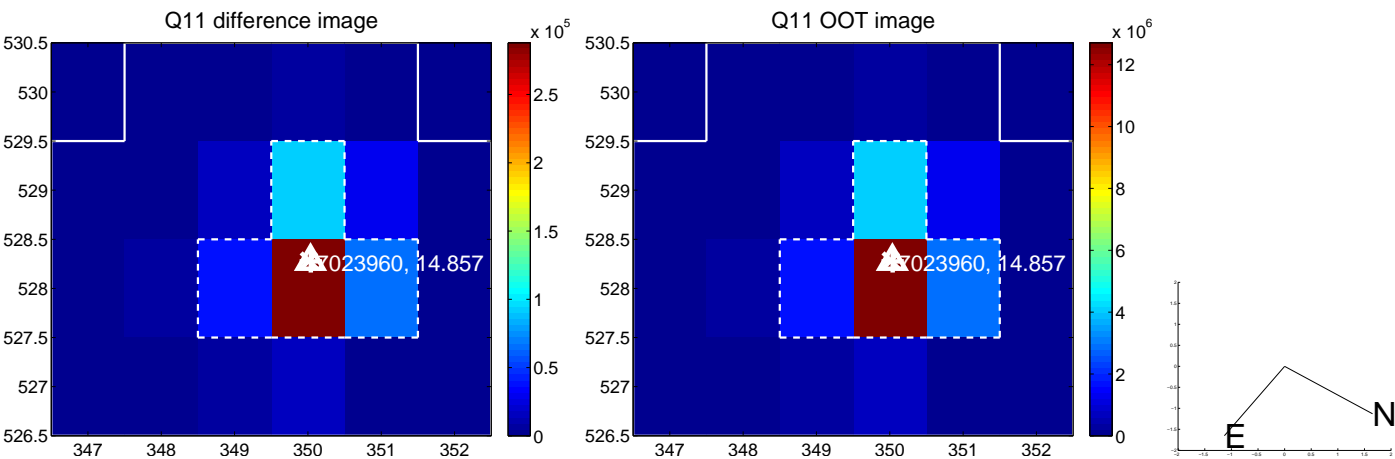
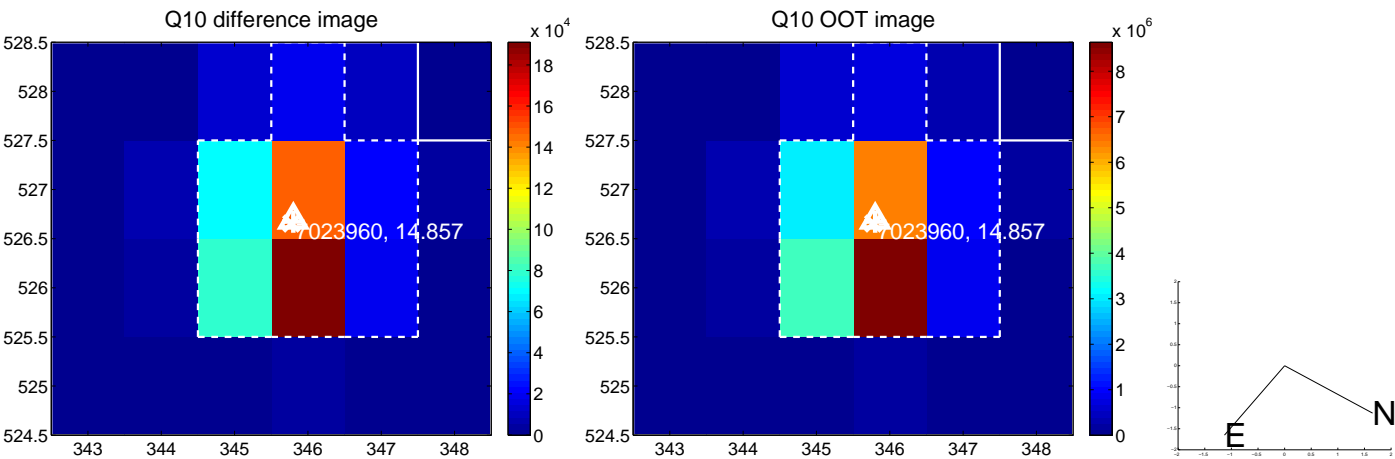
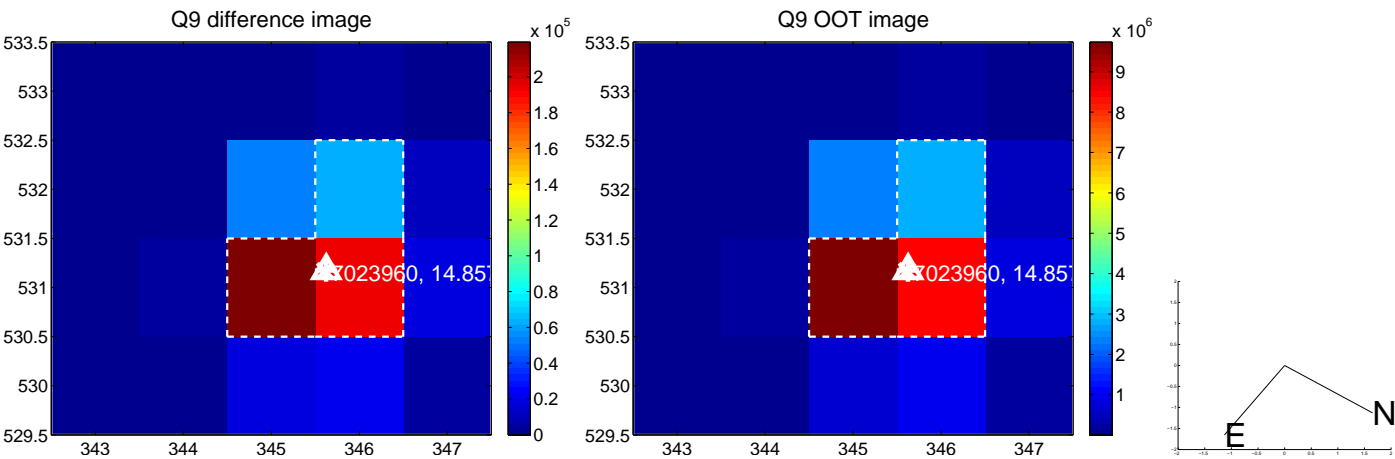
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



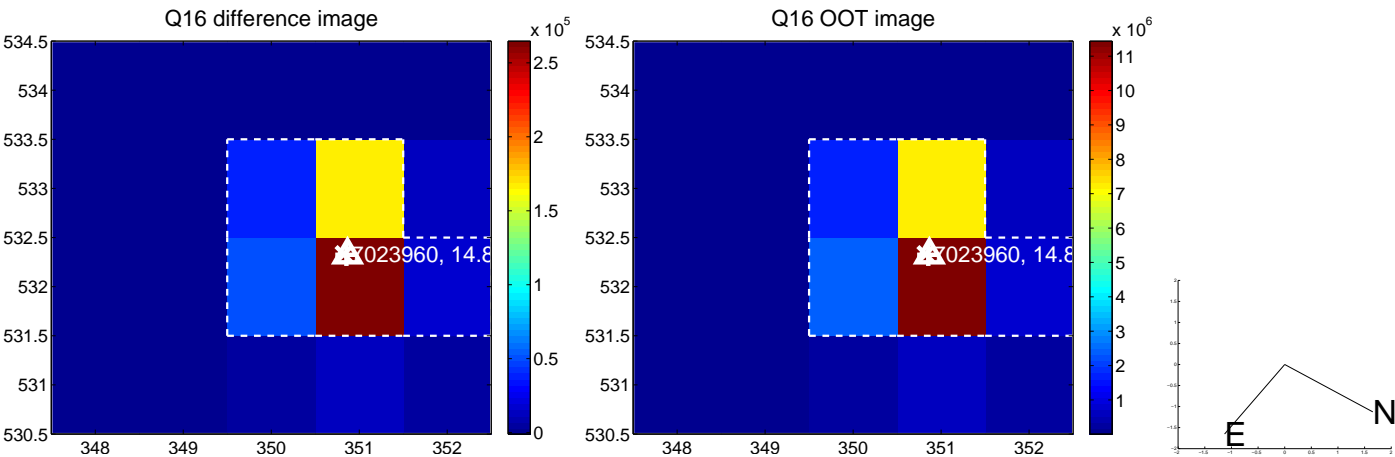
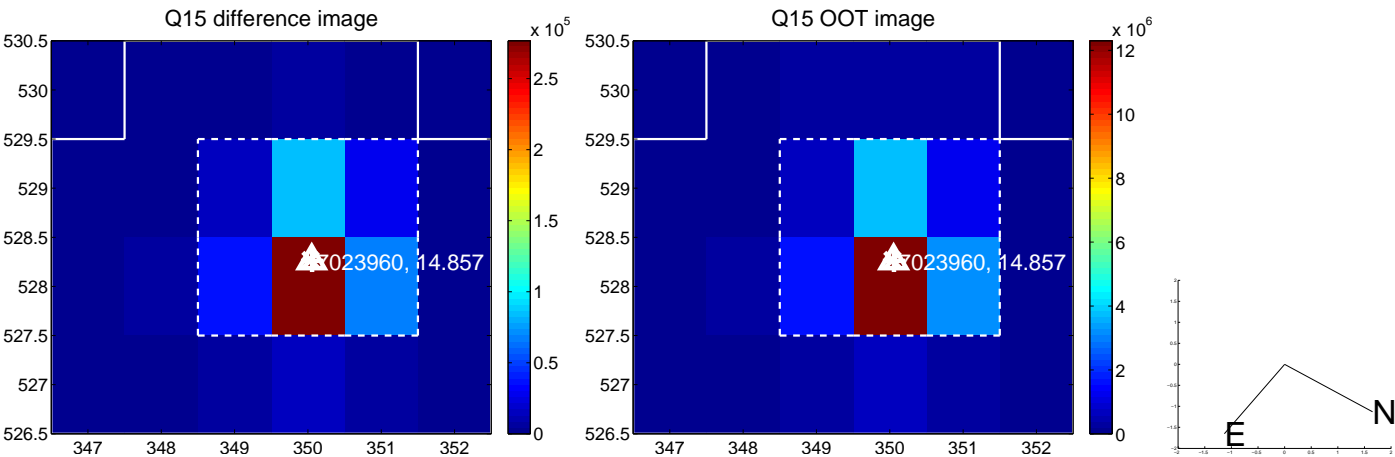
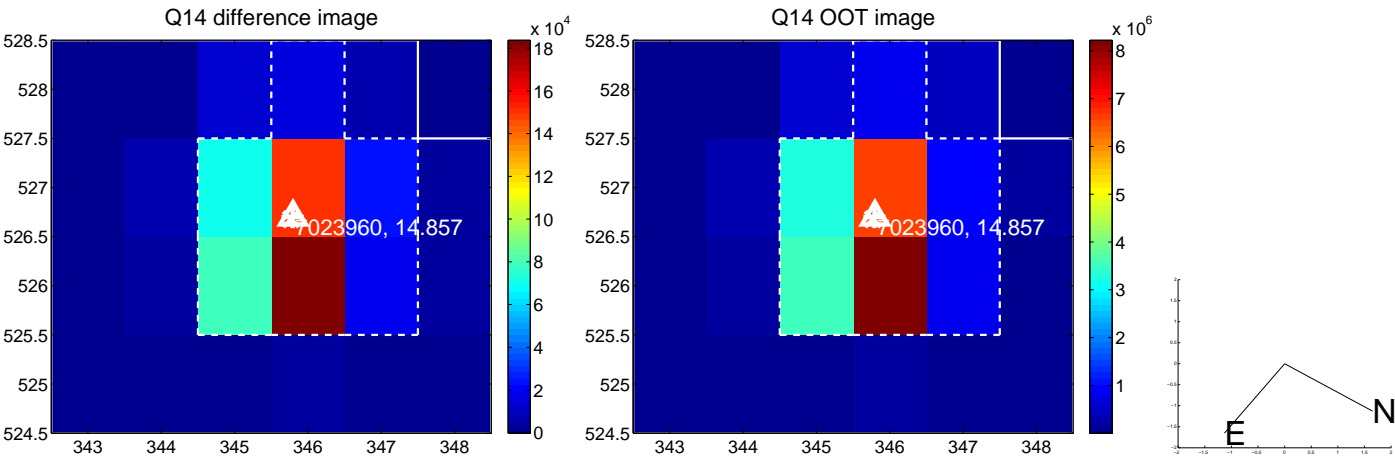
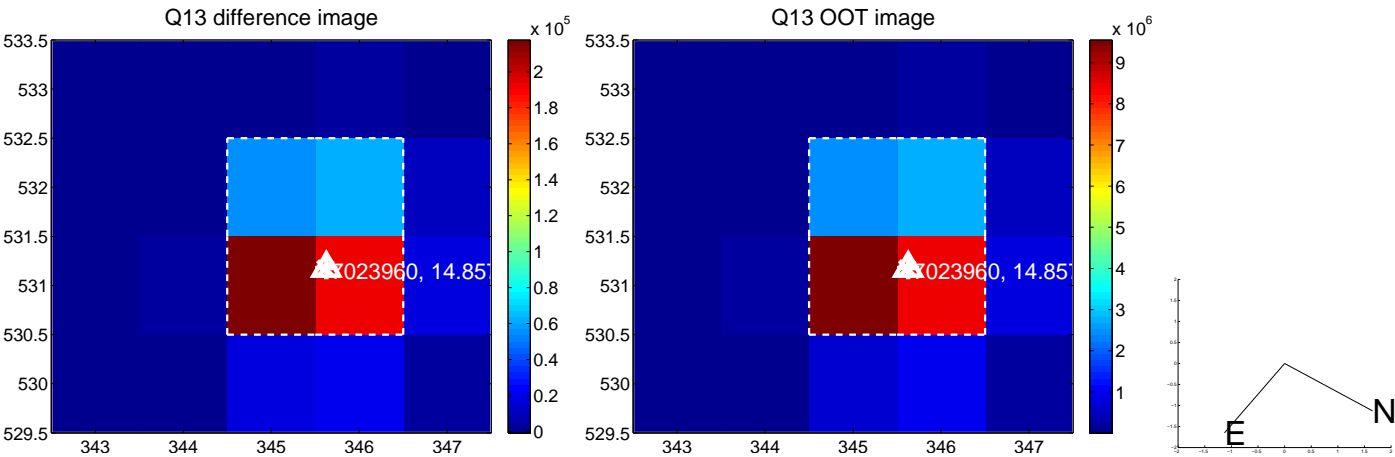
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



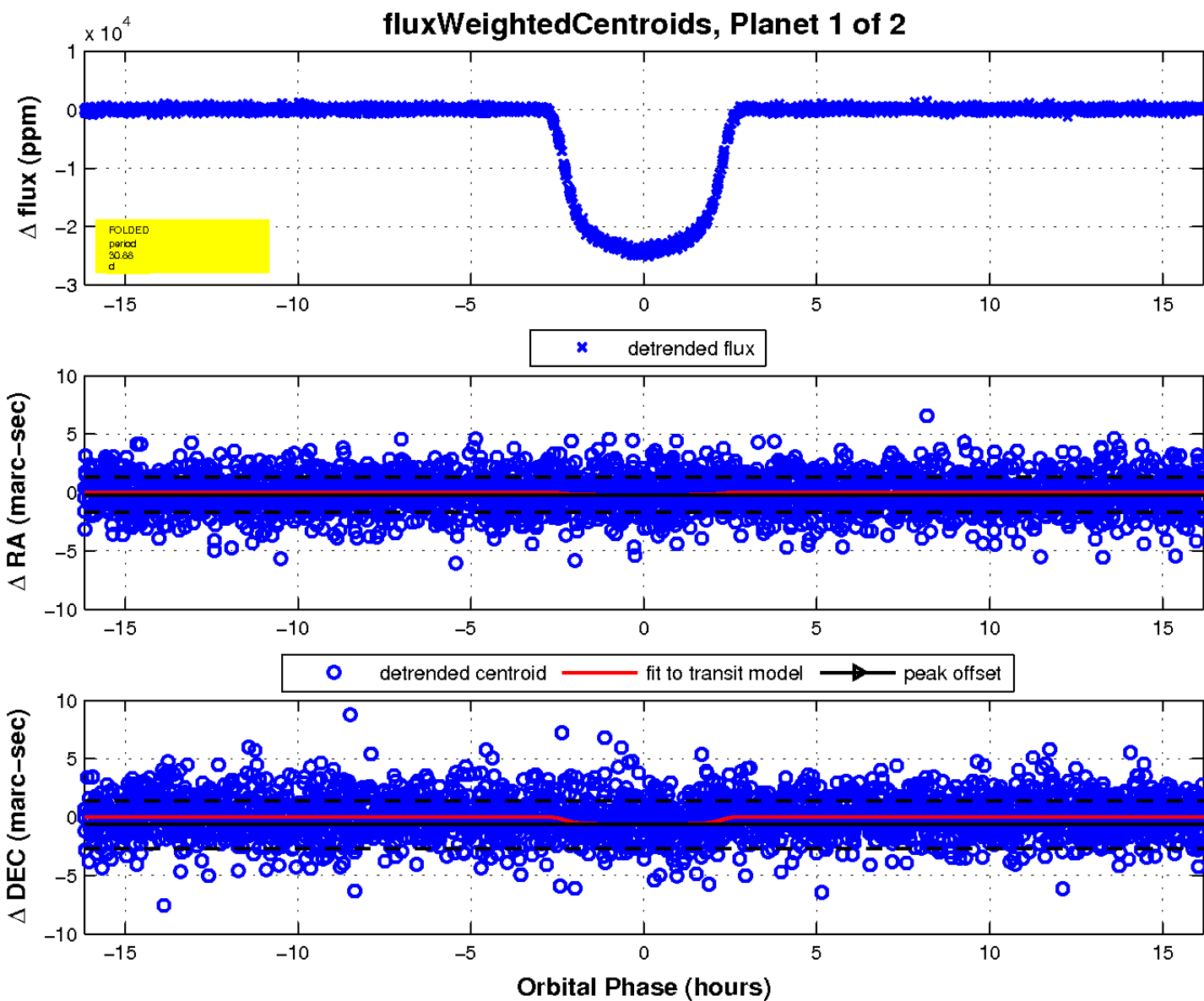
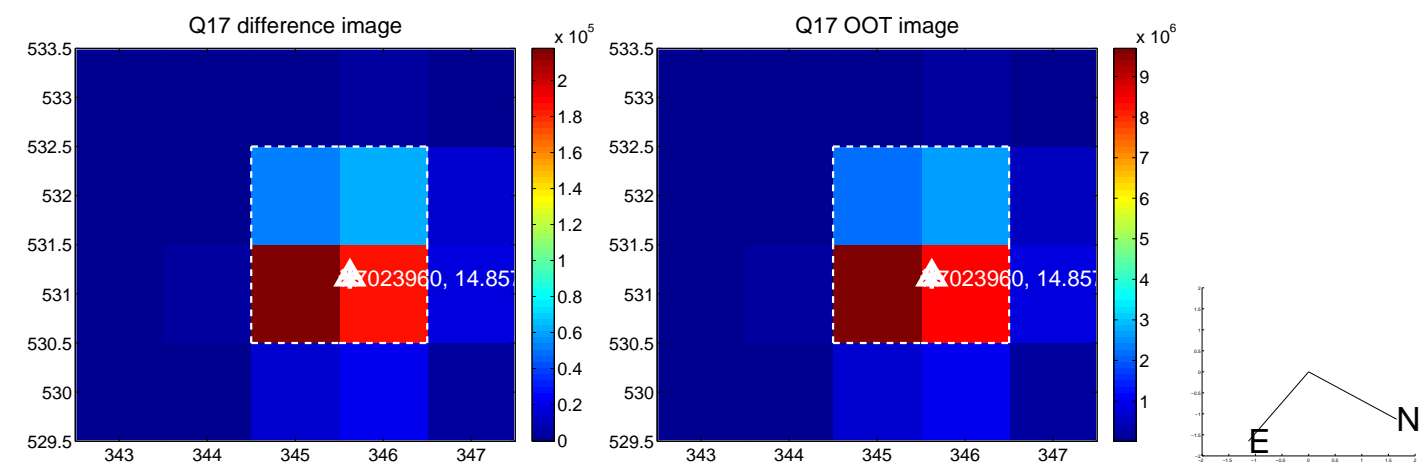
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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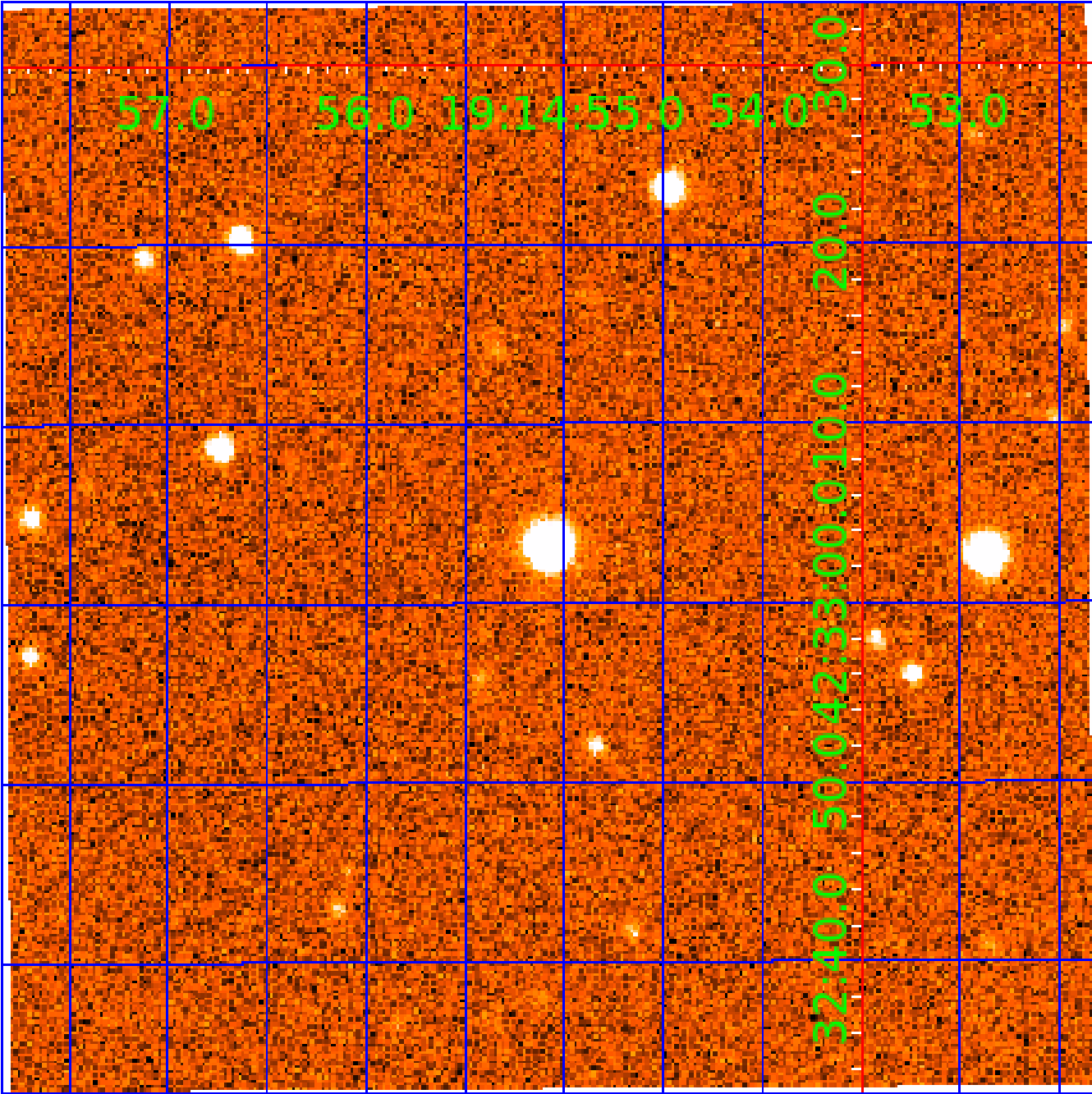


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007023960

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
007023960-01	OBS	0187.01	30.882538	151.529495	24071.9	5.395	1235.1	1143.4	0.99	6014	15.46	29.19
007023960-02	OBS	No	30.882676	156.124733	301.1	5.981	16.7	16.9	0.99	6014	2.04	29.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007023960-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
007023960-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007023960-02

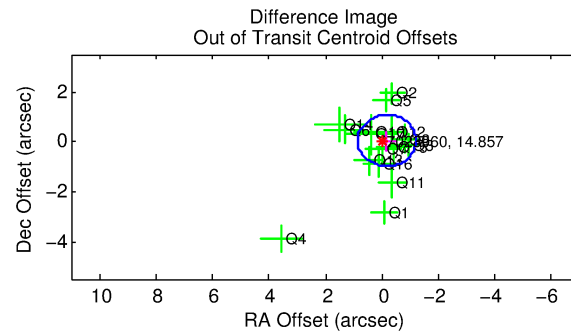
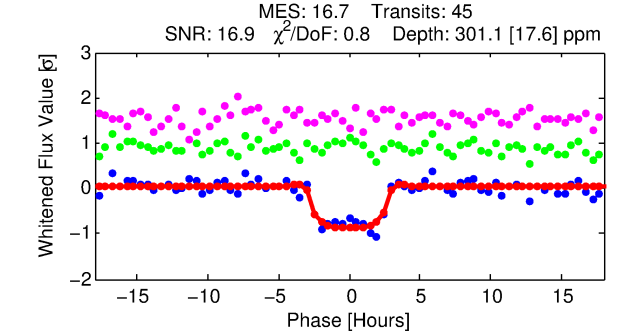
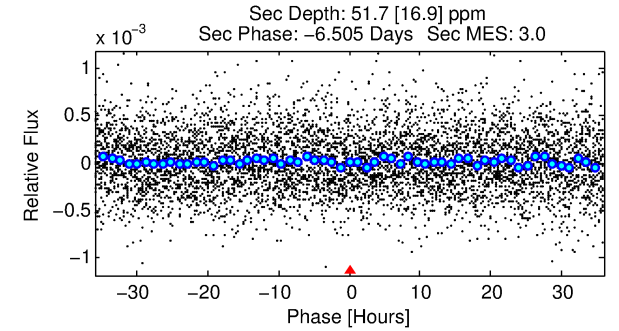
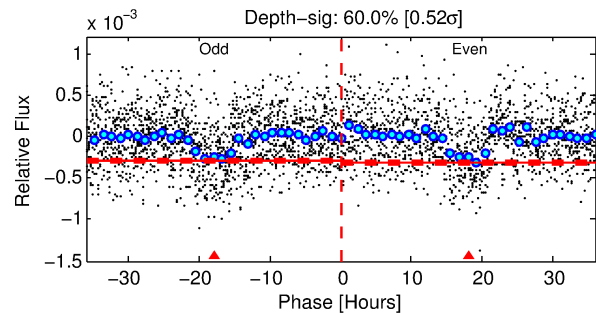
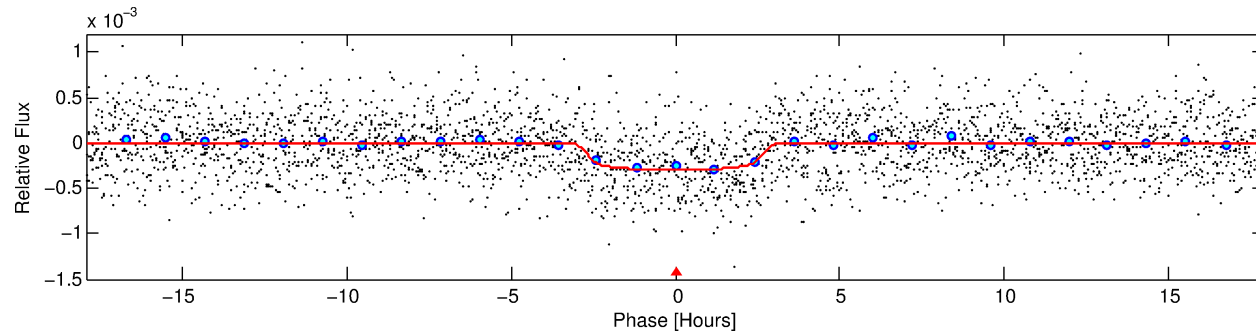
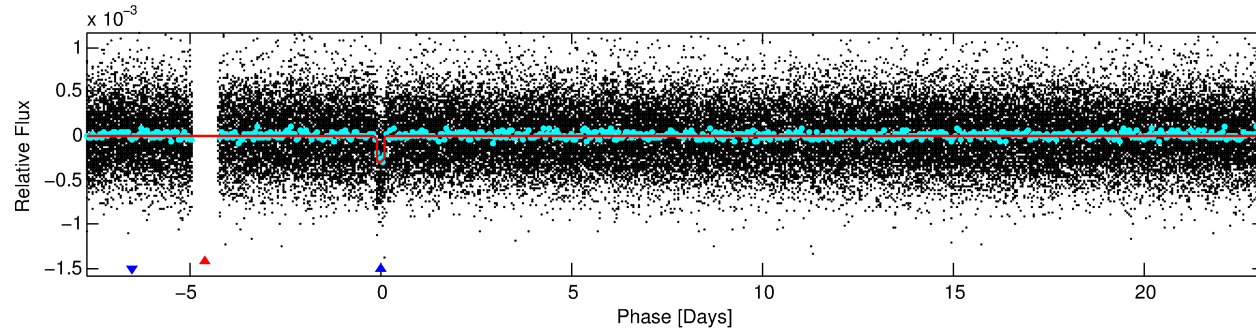
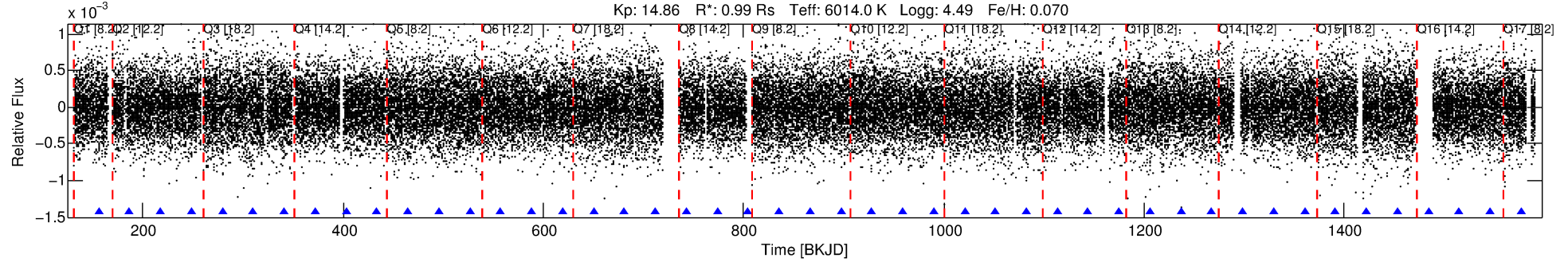
No Significant Match Found

DV One-Page Summary

KIC: 7023960 Candidate: 2 of 2 Period: 30.883 d

KOI: K00187 Corr: No Ephemeris Match

Kp: 14.86 R*: 0.99 Rs Teff: 6014.0 K Logg: 4.49 Fe/H: 0.070



DV Fit Results:

Period = 30.88268 [0.00025] d
Epoch = 156.1247 [0.0065] BKJD
Rp/R* = 0.0188 [0.0022]
a/R* = 18.81 [10.43]
b = 0.90 [0.12]
Seff = 29.19 [11.55]
Teff = 593 [59] K
Rp = 2.04 [0.66] Re
a = 0.1990 [0.0510] AU
Ag = 270.95 [148.65] [1.82σ]
Teffp = 3718 [394] K [7.85σ]

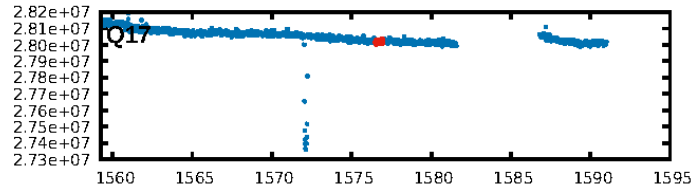
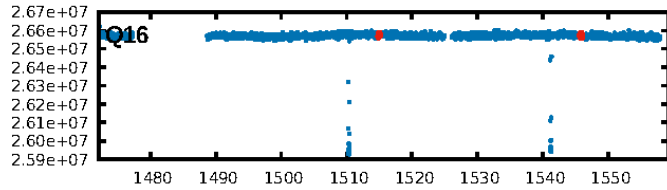
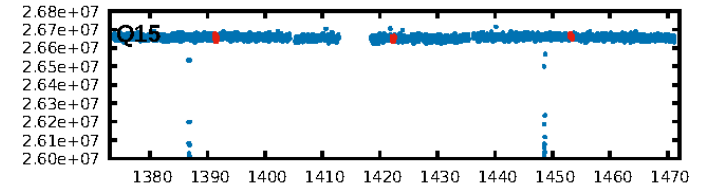
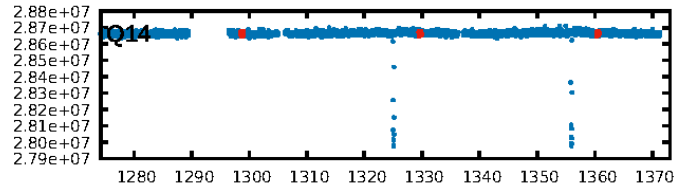
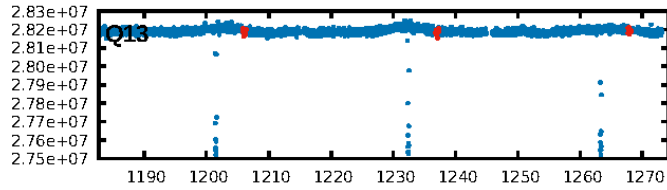
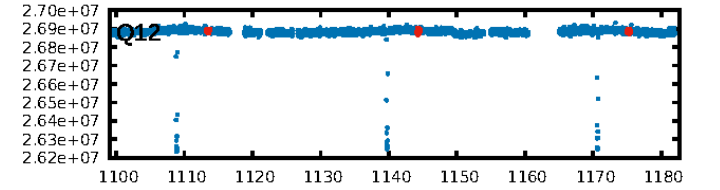
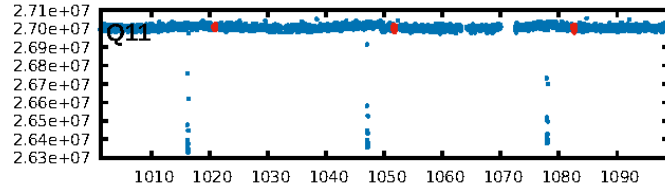
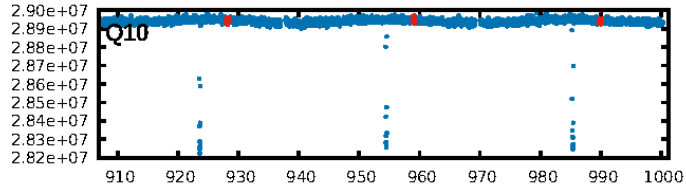
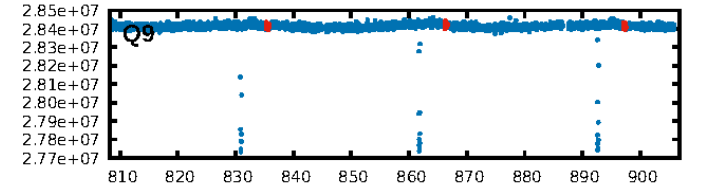
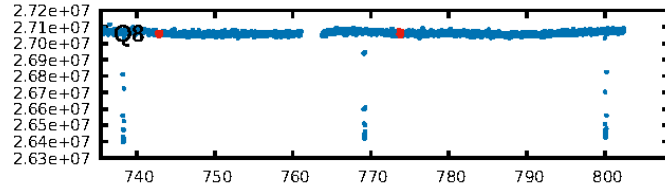
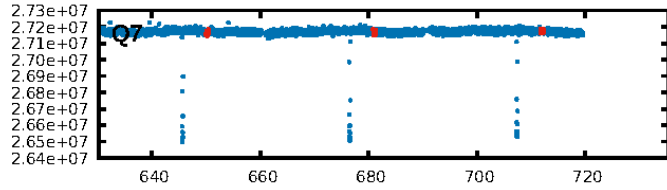
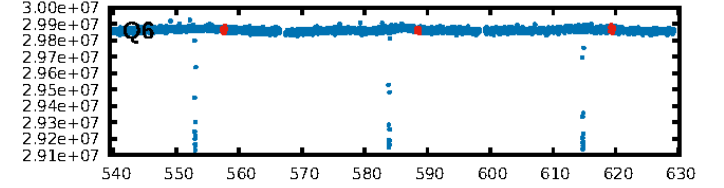
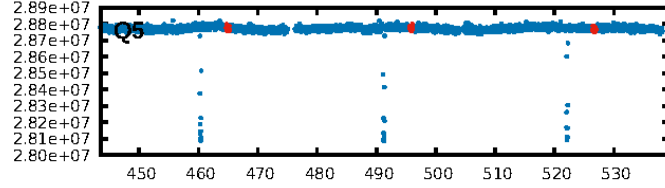
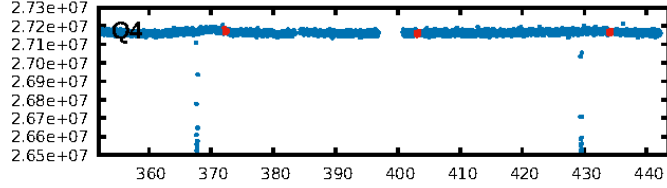
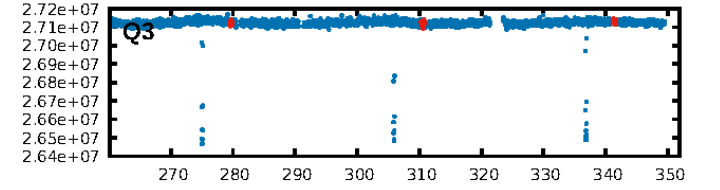
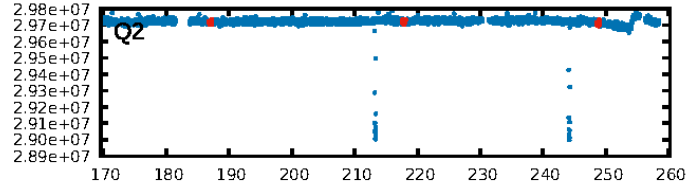
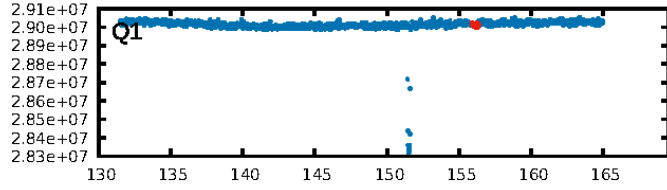
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 93.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.60e-59
RollingBand-fgt: 1.00 [43/43]
GhostDiagnostic-chr: 2.086
Centroid-sig: 0.1%
Centroid-so: 1.809 arcsec [2.27σ]
OotOffset-rm: 0.174 arcsec [0.51σ]
KicOffset-rm: 0.239 arcsec [0.75σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.88 [14/16]
DiffImageOverlap-fno: 1.00 [17/17]

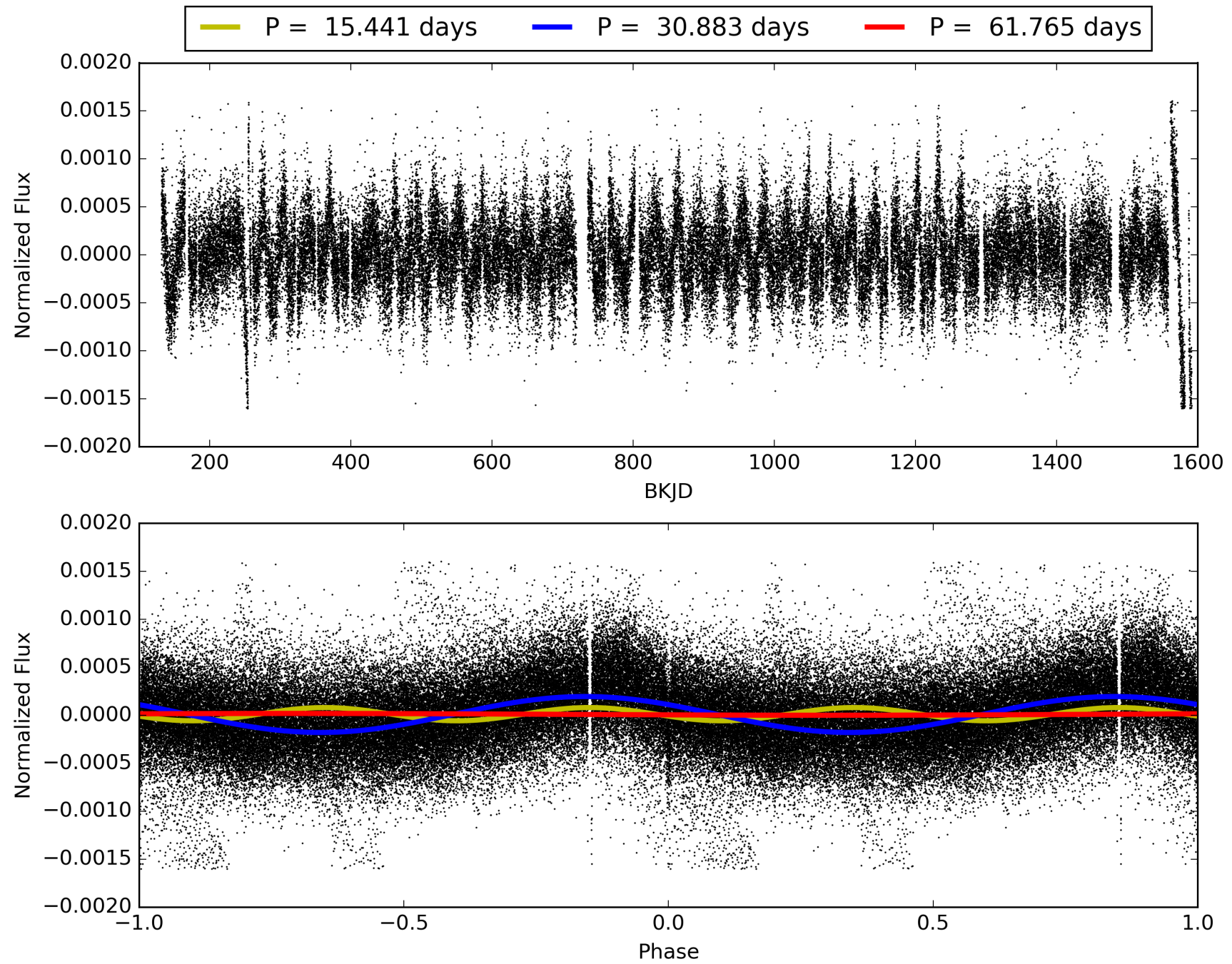
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:59:10 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 007023960-02, PDC Light Curves

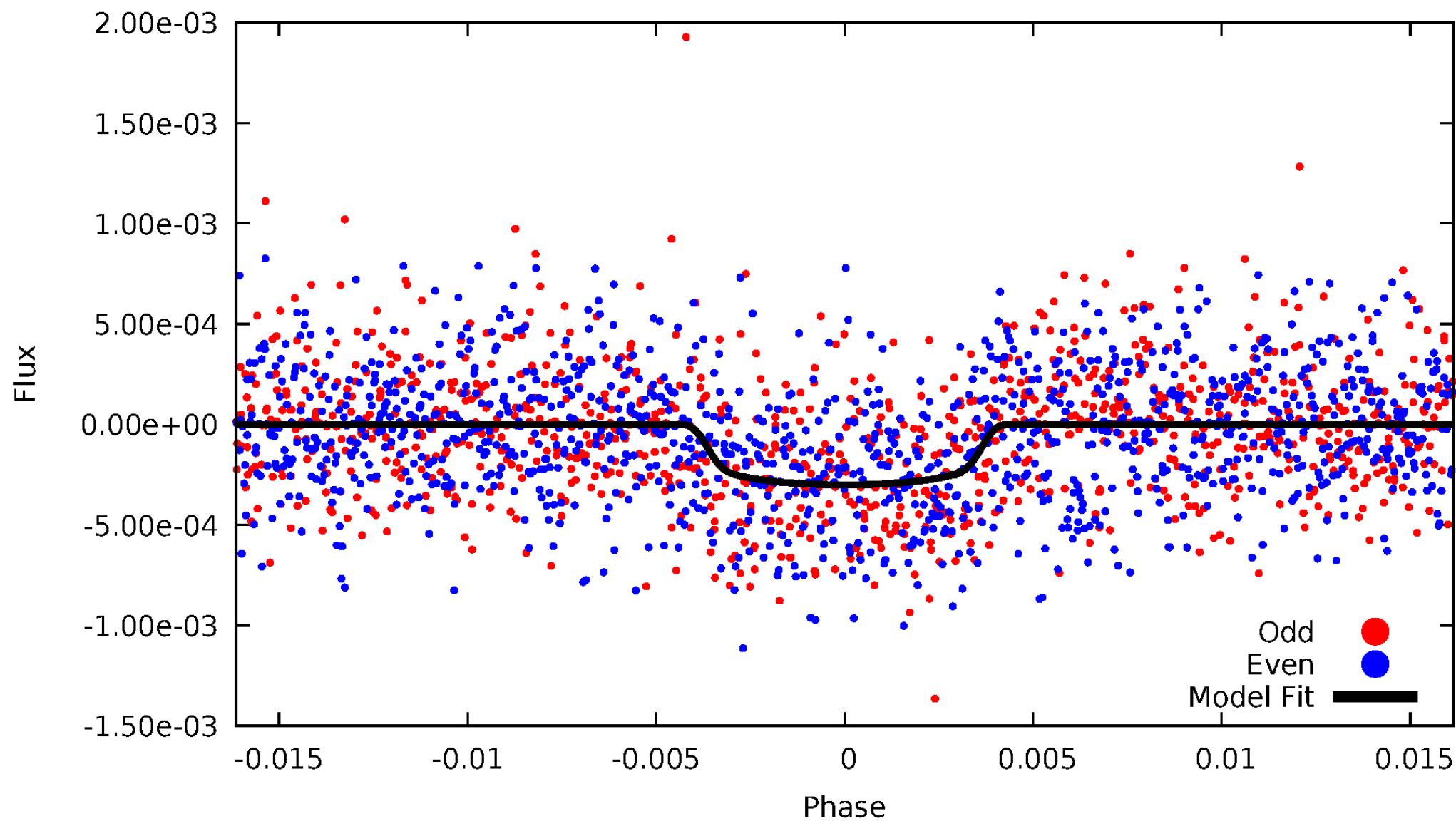


TCE 007023960-02



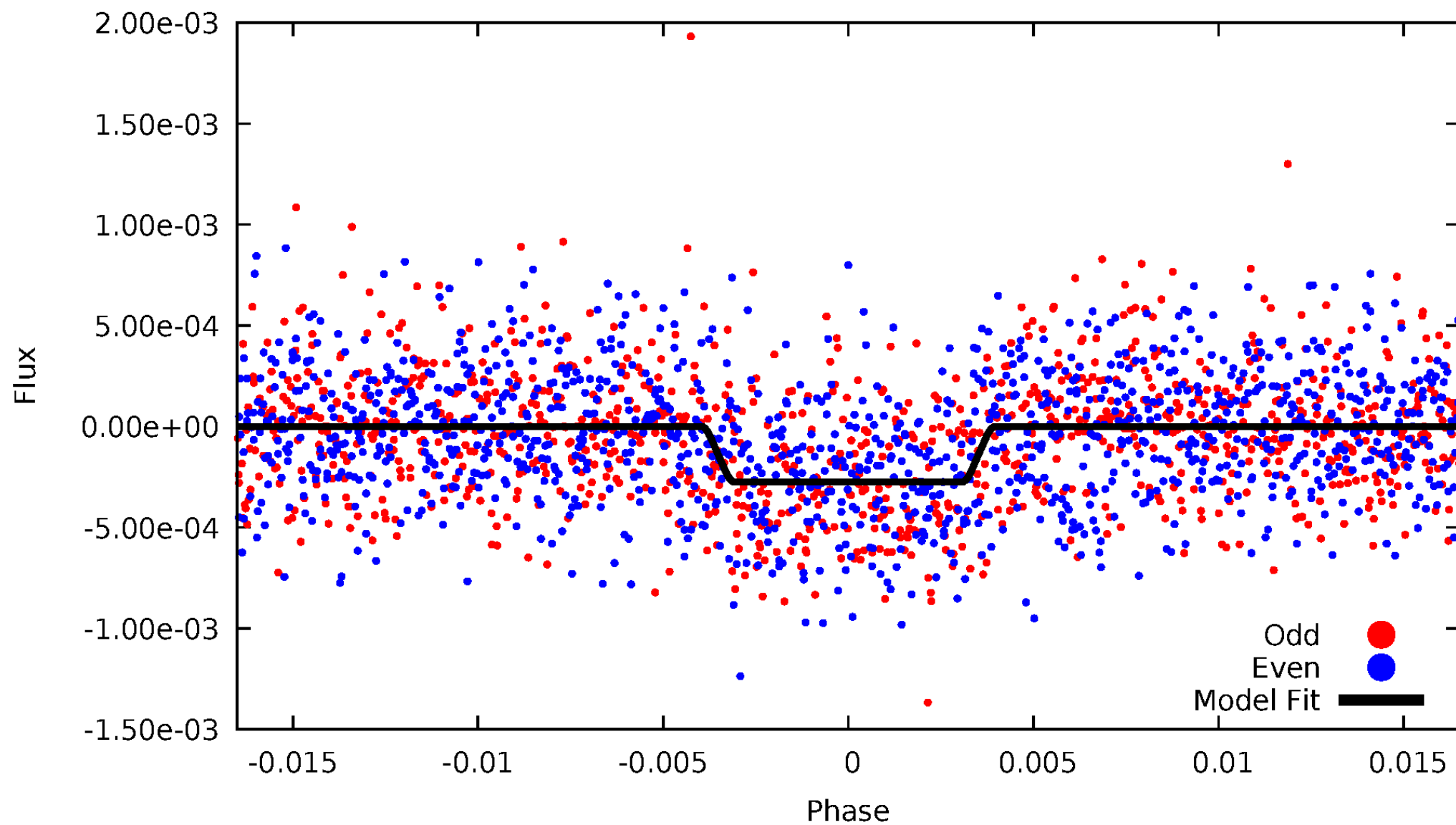
DV Odd/Even

TCE 007023960-02



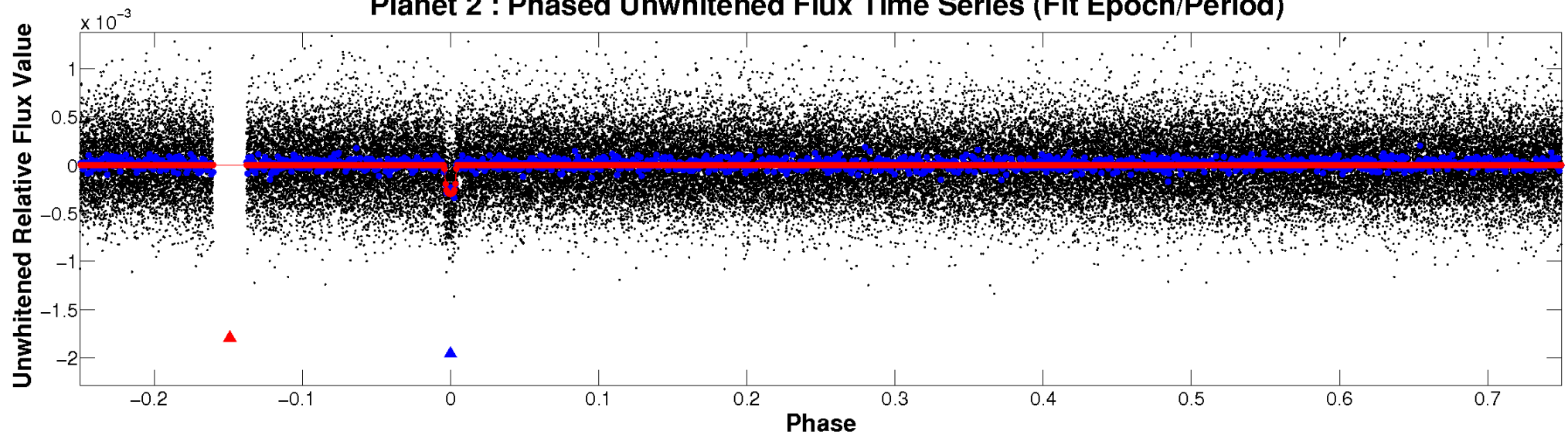
ALT Odd/Even

TCE 007023960-02

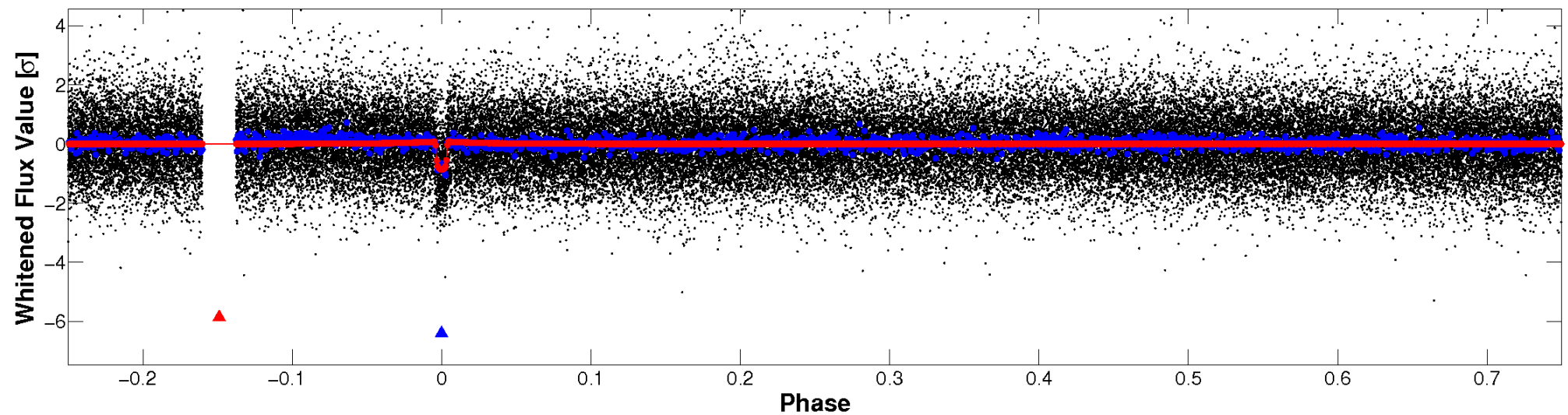


Non-Whitened Vs. Whitened Light Curve

Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

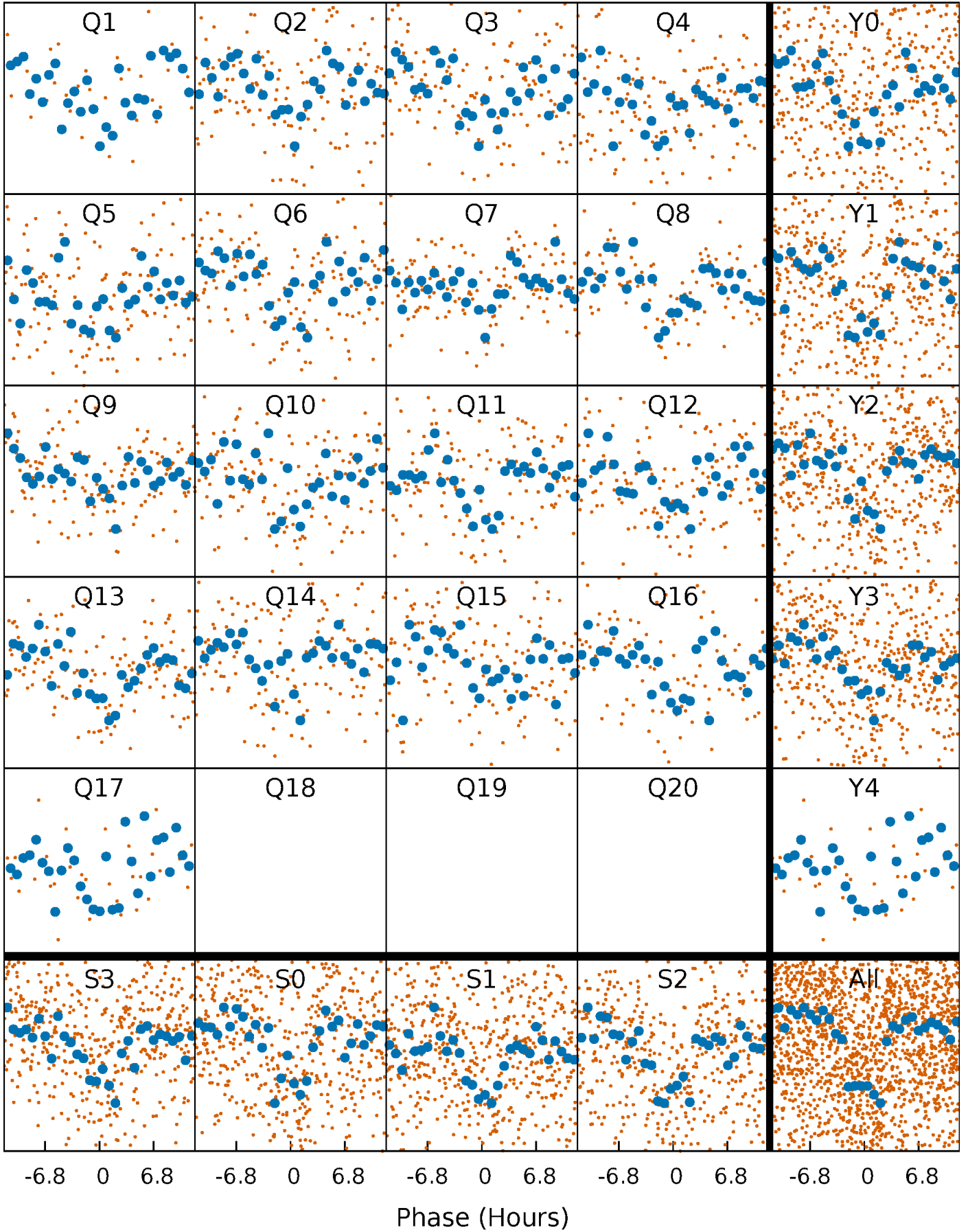


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



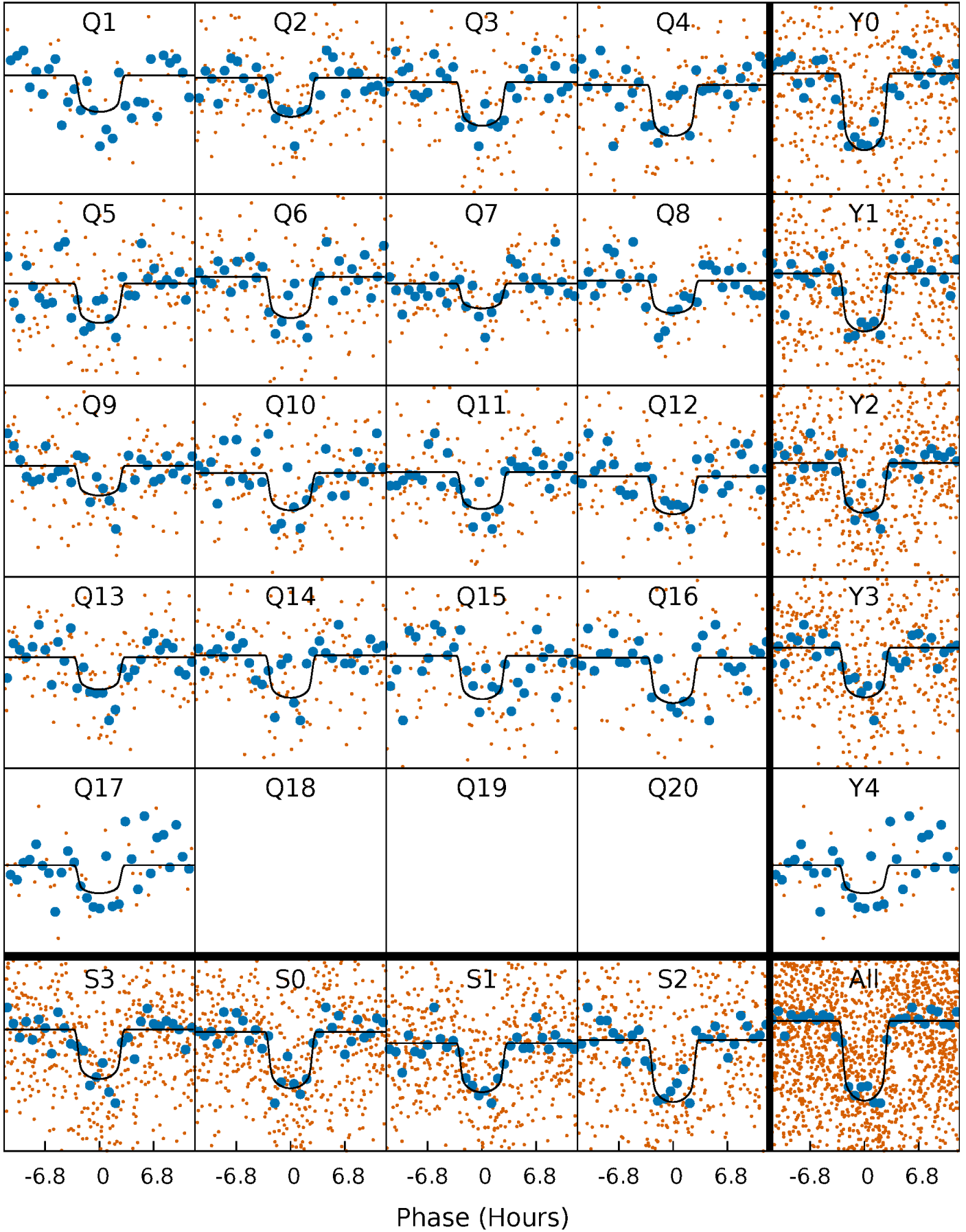
PDC Quarter-Phased Transit Curves

TCE 007023960-02 P= 30.882676 Days $T_0=156.124733$ (BKJD)



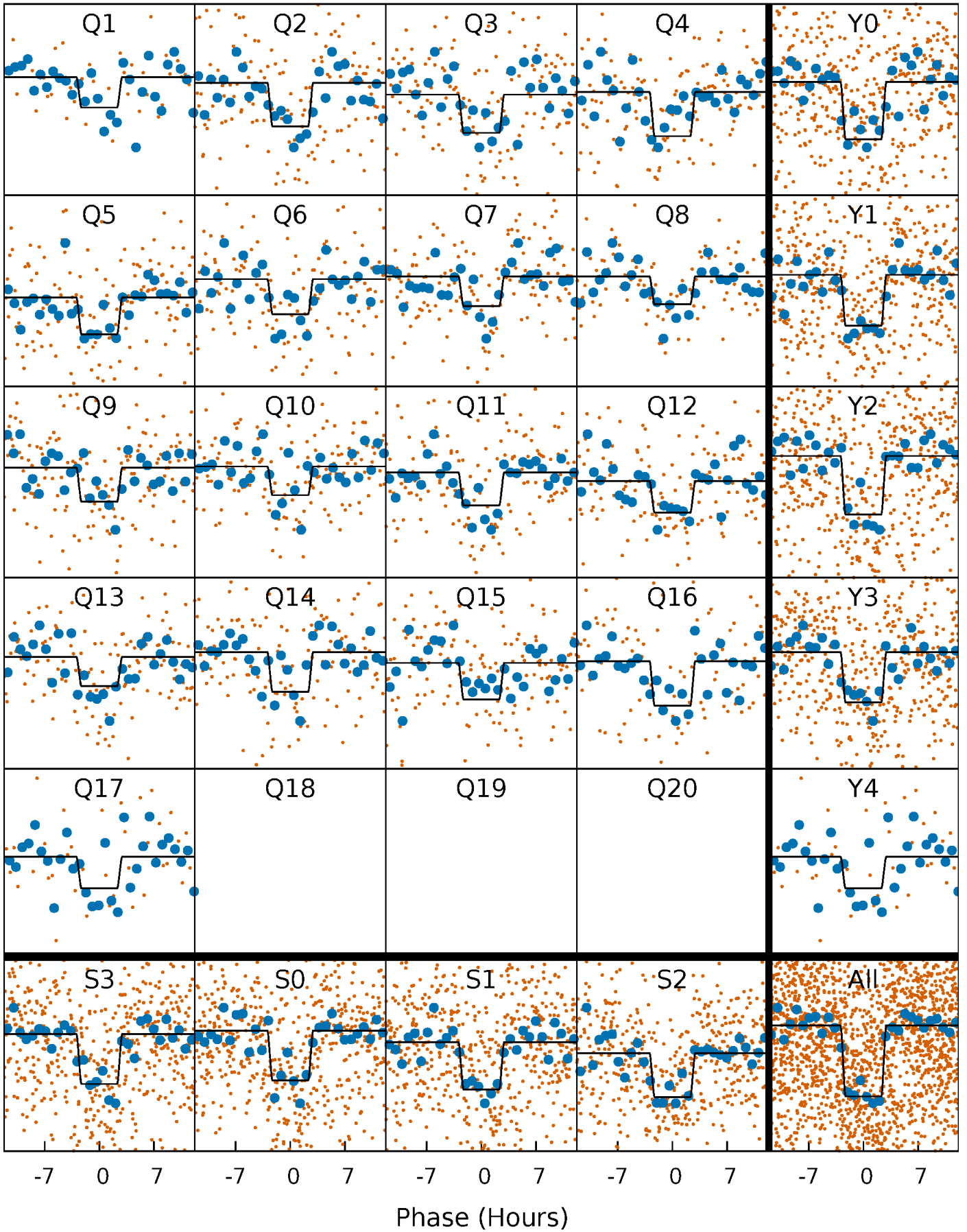
DV Quarter-Phased Transit Curves

TCE 007023960-02 $P = 30.882676$ Days $T_0 = 156.124733$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

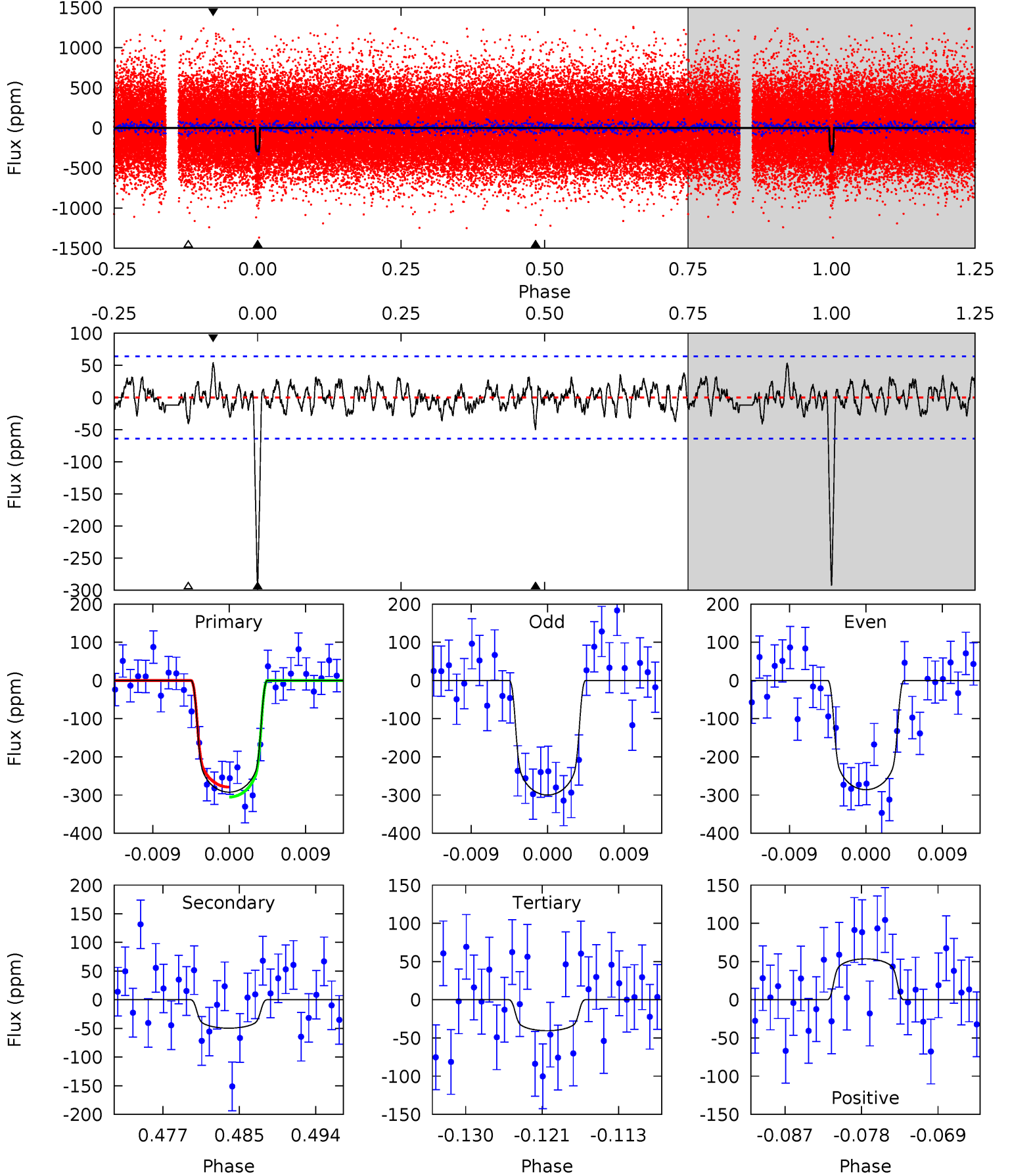
TCE 007023960-02 P= 30.883449 Days $T_0=156.105480$ (BKJD)



DV Model-Shift Uniqueness Test

007023960-02, $P = 30.882676$ Days, $E = 125.242057$ Days

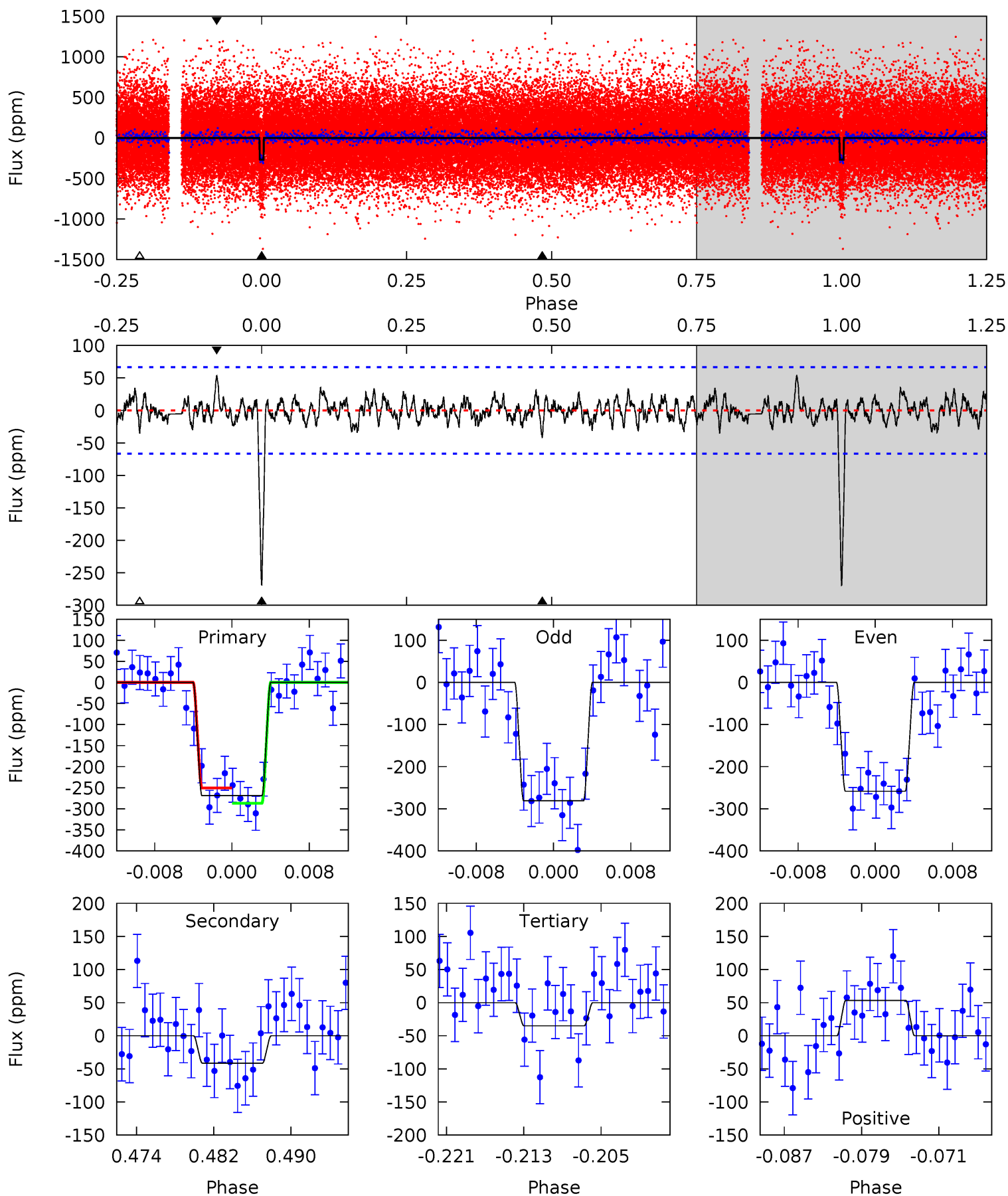
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.1	3.91	3.20	4.23	5.05	2.62	1.19	19.9	18.9	0.72	-0.31	0.55	0.98	0.15	1.03



Alt Model-Shift Uniqueness Test

007023960-02, $P = 30.883449$ Days, $E = 125.222031$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.5	3.16	2.67	4.06	5.07	2.66	1.02	17.8	16.4	0.48	-0.90	0.86	1.06	0.17	1.38



Stellar Parameters For KIC 007023960

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6014^{+163}_{-199}	$4.486^{+0.048}_{-0.204}$	$0.070^{+0.250}_{-0.300}$	$0.993^{+0.302}_{-0.101}$	$1.101^{+0.120}_{-0.147}$	$1.584^{+0.325}_{-0.838}$
	+3%/-3%	+1%/-5%	+357%/-429%	+30%/-10%	+11%/-13%	+21%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 007023960-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-50 ± 13	$2.11^{+0.37}_{-0.32}$	844^{+66}_{-37}	4020^{+285}_{-290}	244^{+114}_{-93}
Alt.	-41 ± 13	$1.87^{+0.37}_{-0.30}$	846^{+64}_{-38}	4050^{+322}_{-305}	252^{+125}_{-102}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

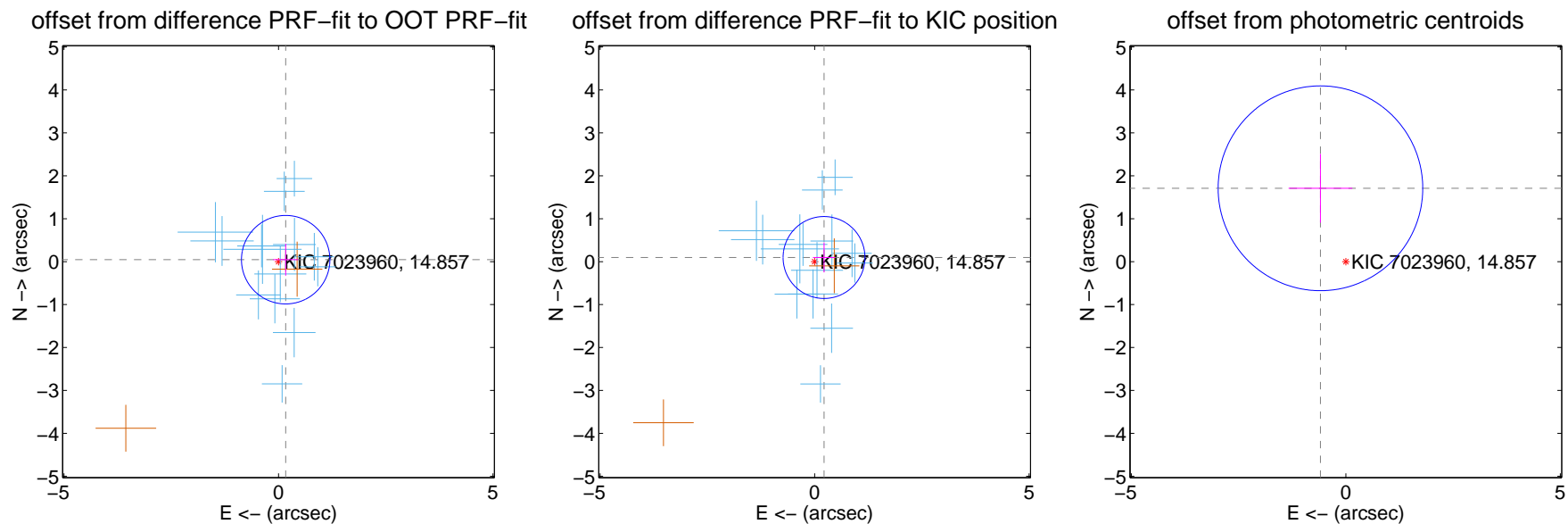
DV Centroid Data

Supplemental centroid analysis for 007023960-02. Kepler magnitude: 14.86. Transit SNR 16.85

There are 14 quarters with good PRF difference image offsets

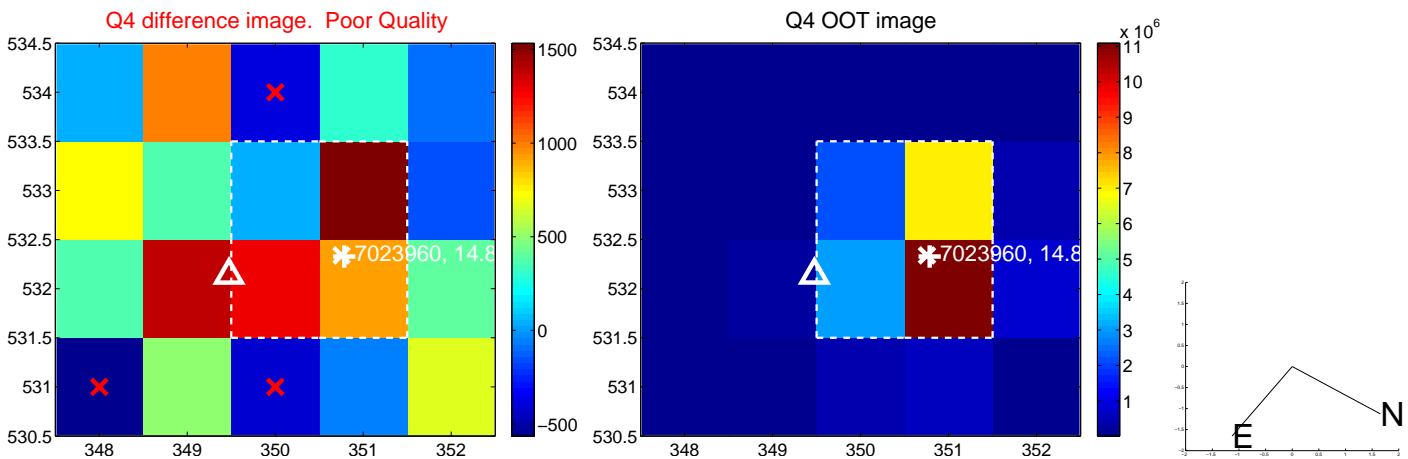
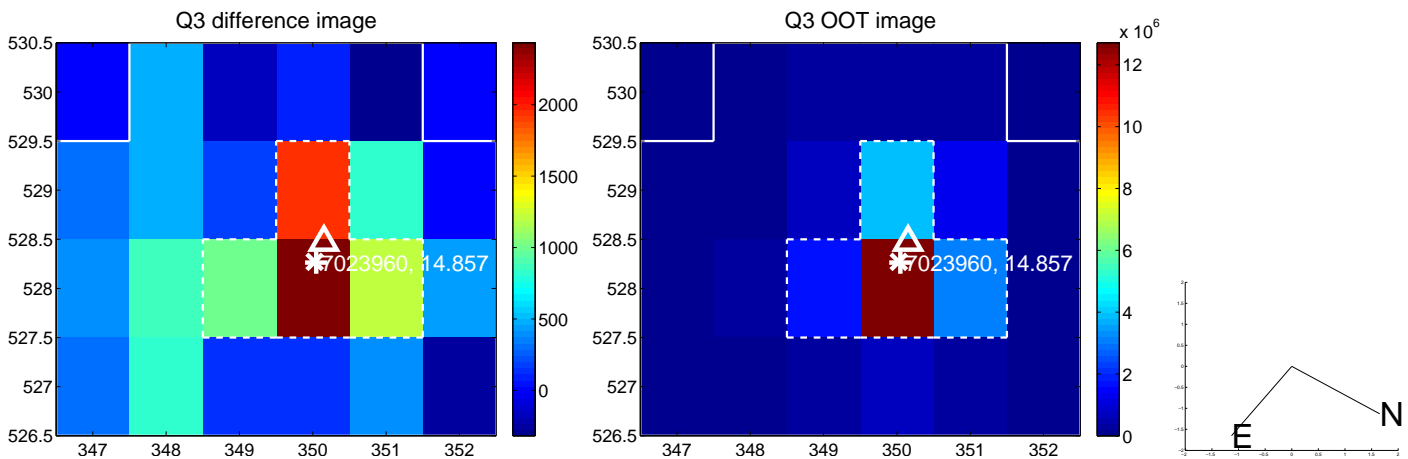
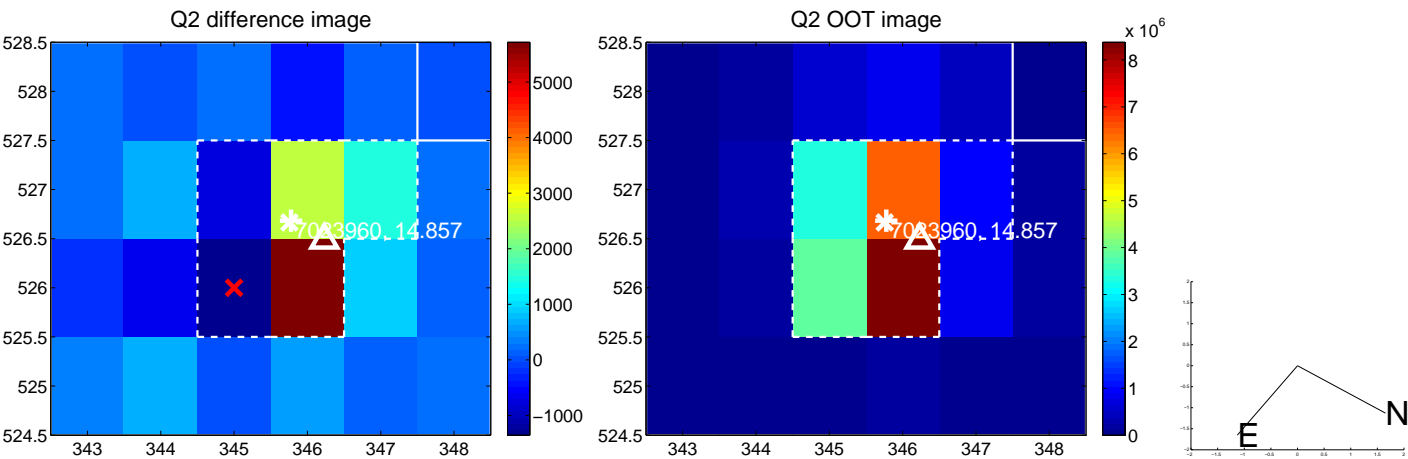
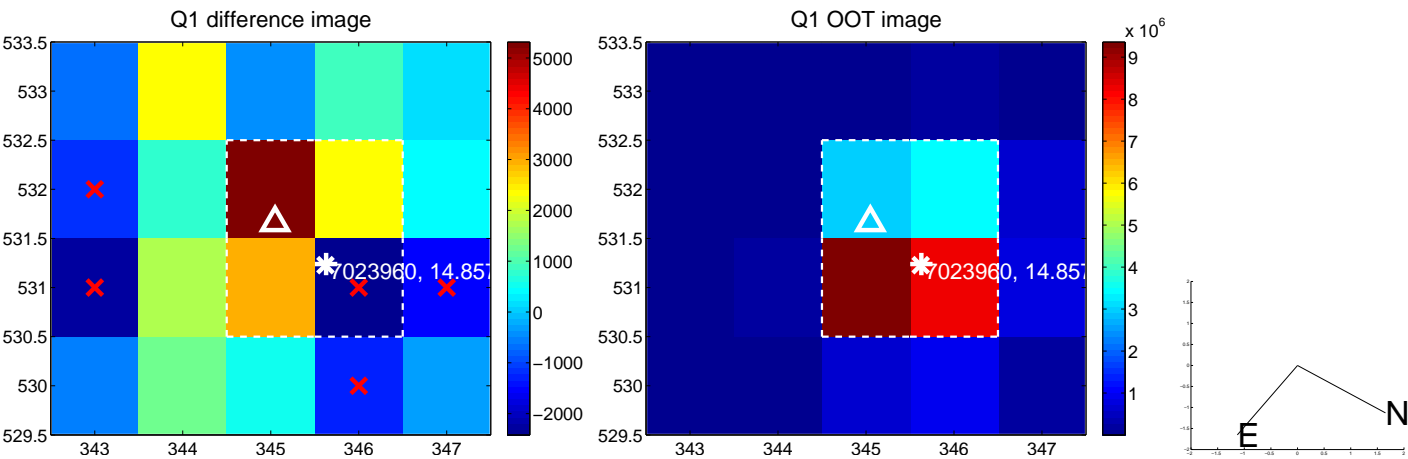
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.174 ± 0.344	0.51	-0.168 ± 0.293	0.045 ± 0.372
PRF-fit source offset from KIC position	0.239 ± 0.318	0.75	-0.219 ± 0.258	0.097 ± 0.348
photometric centroid source offset	1.81 ± 0.80	2.27	0.59 ± 0.74	1.71 ± 0.80

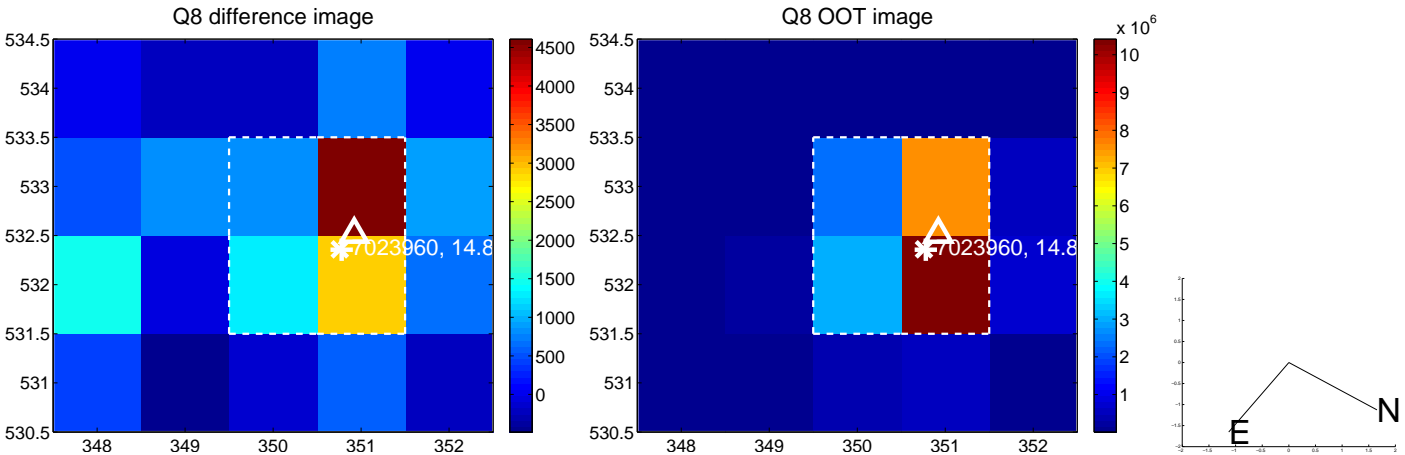
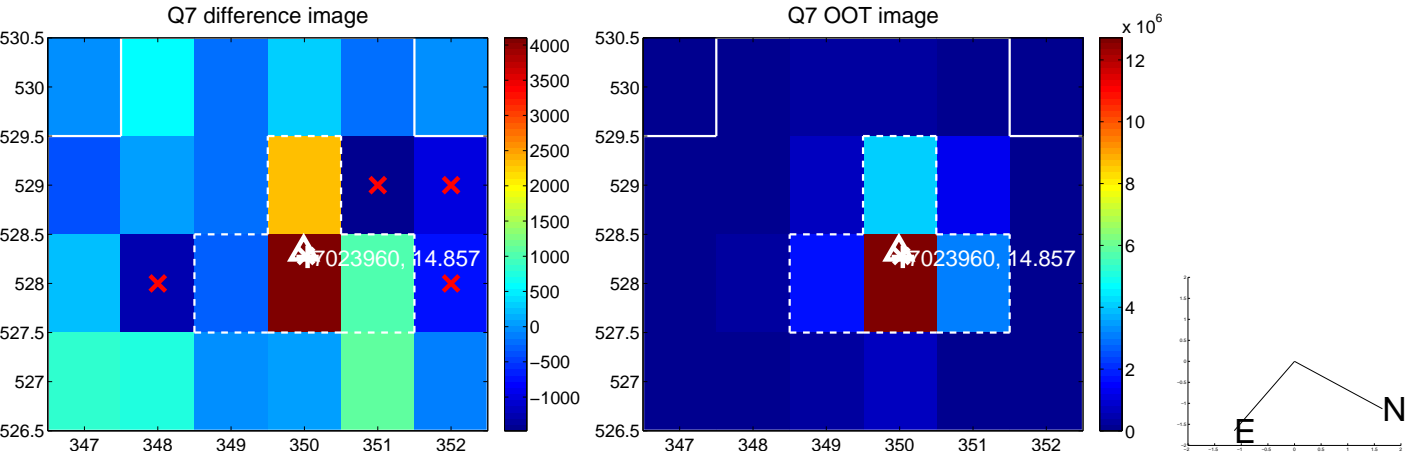
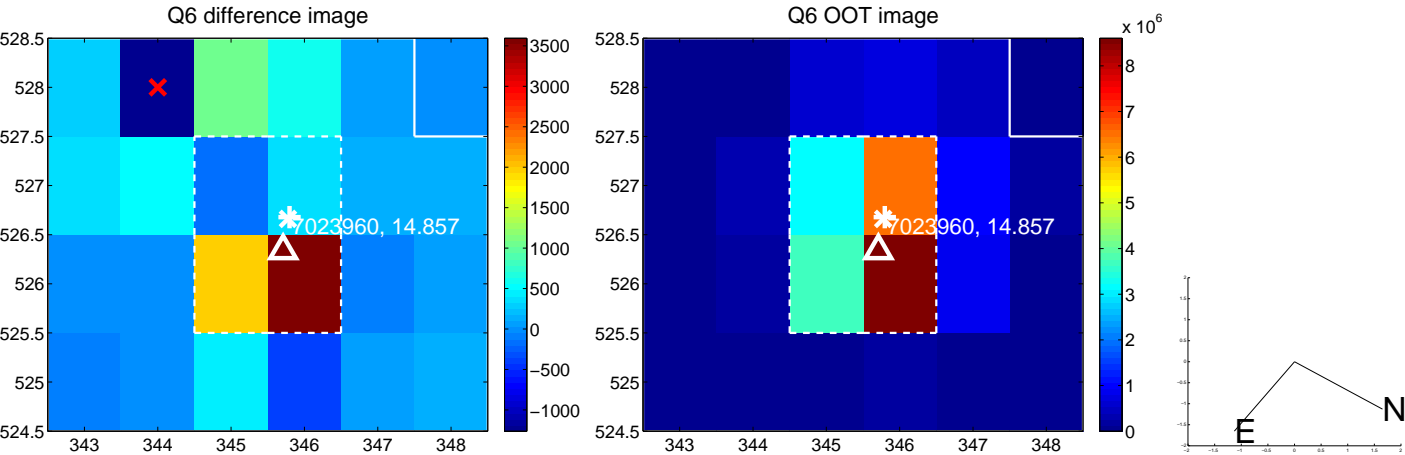
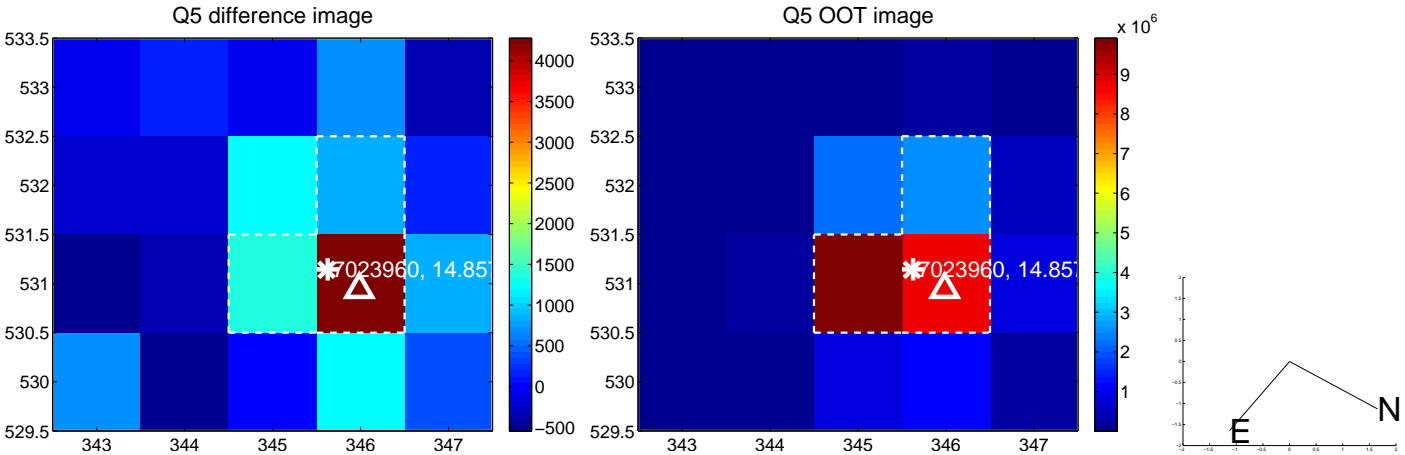


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

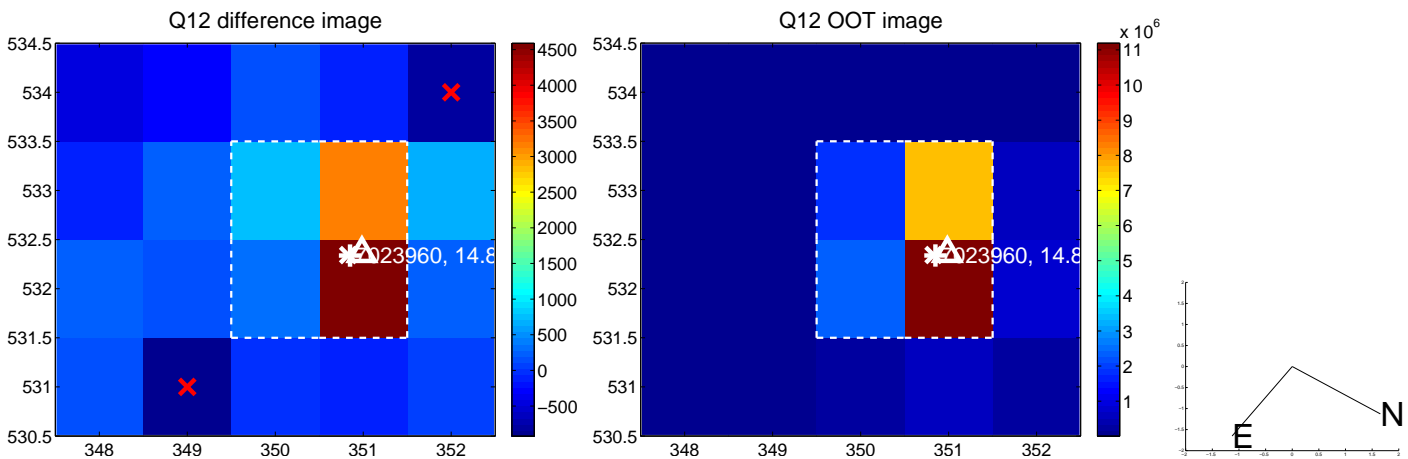
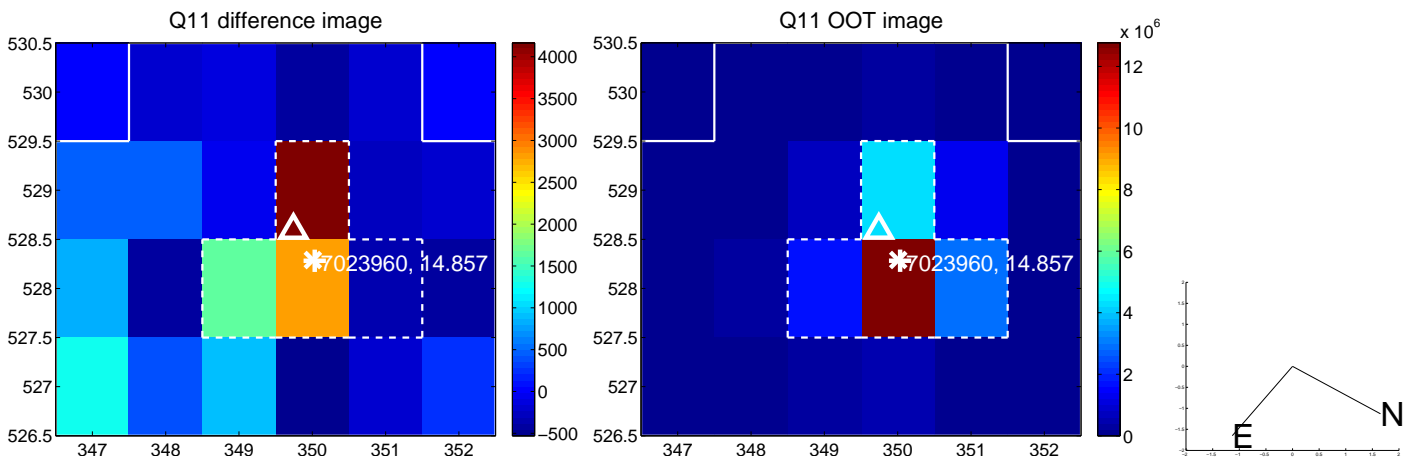
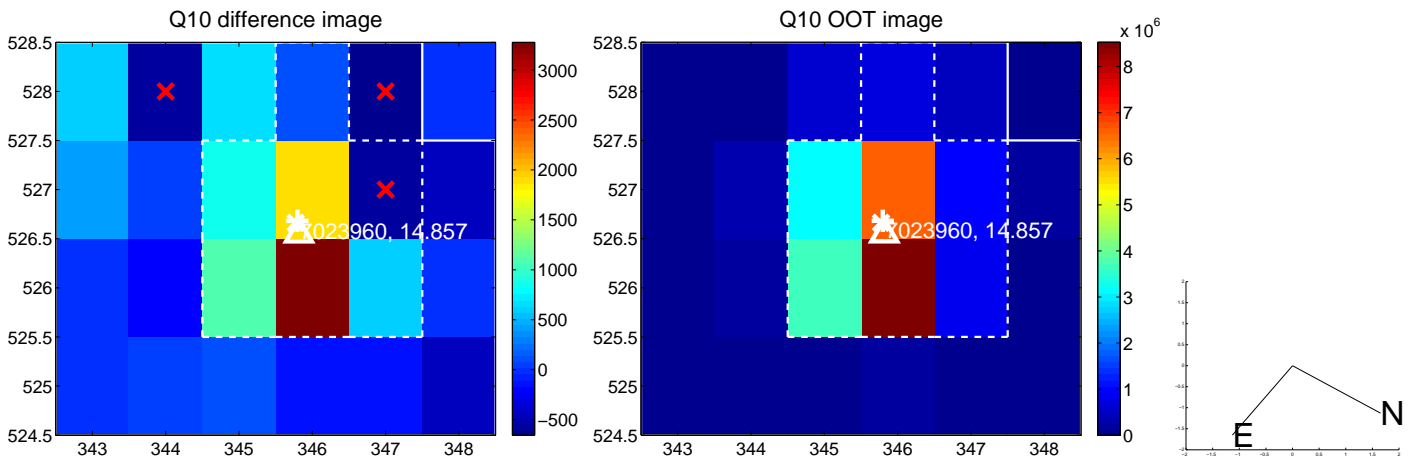
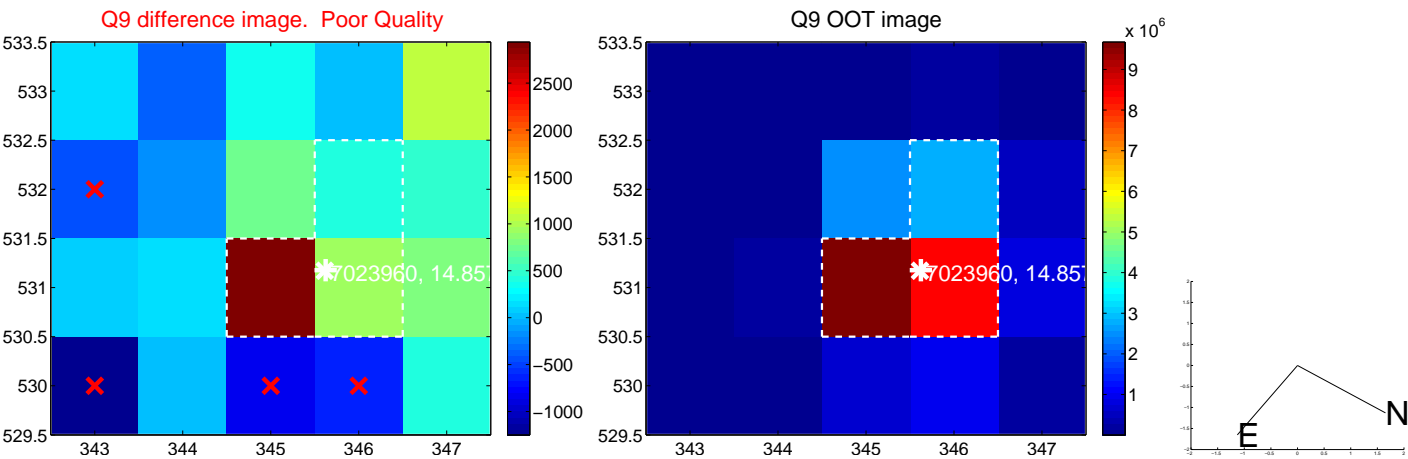
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



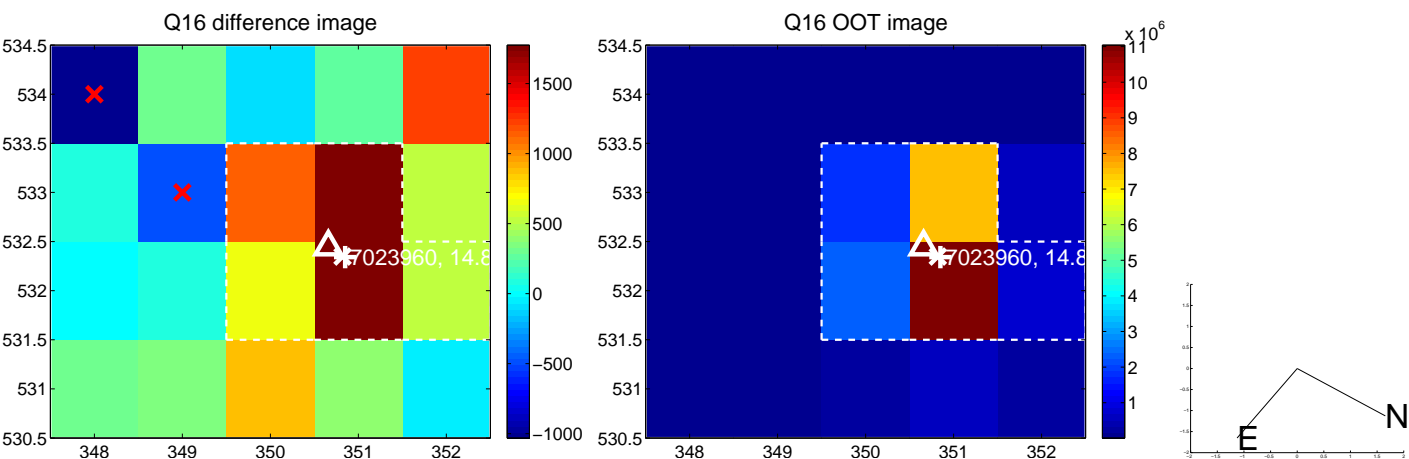
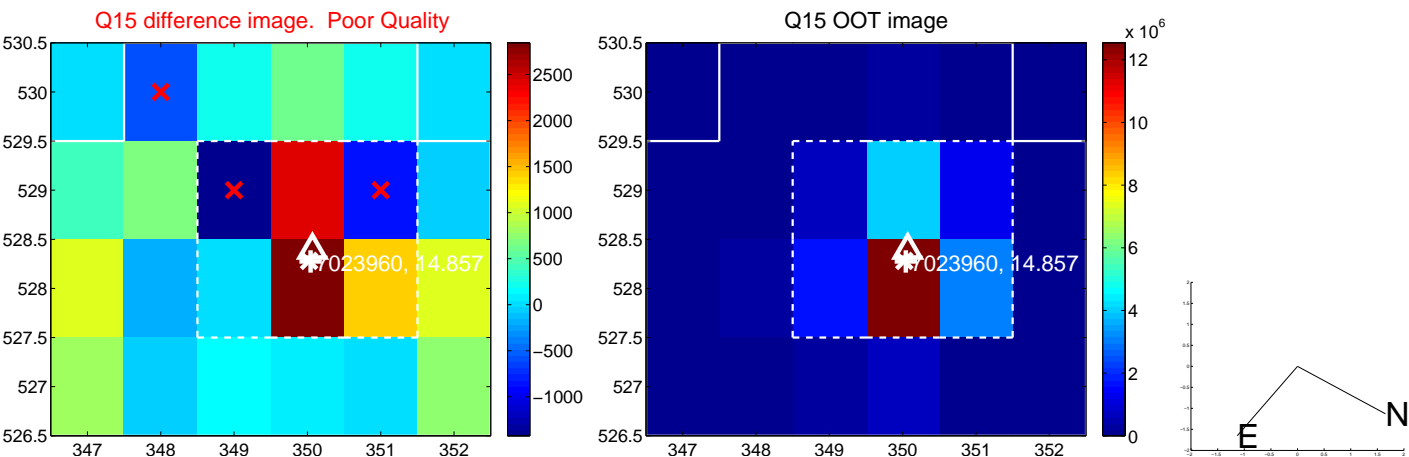
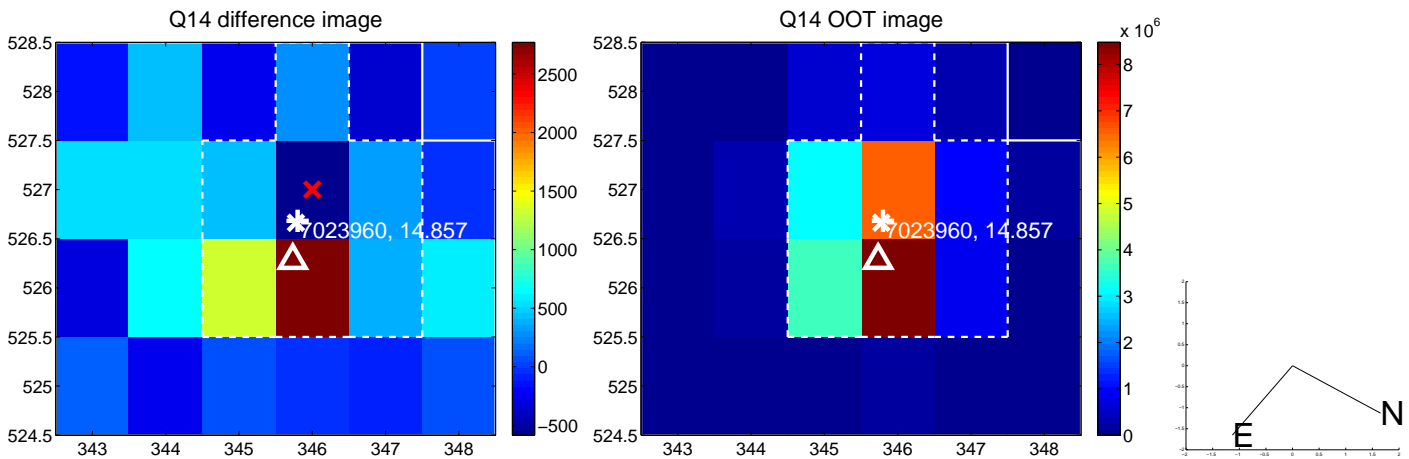
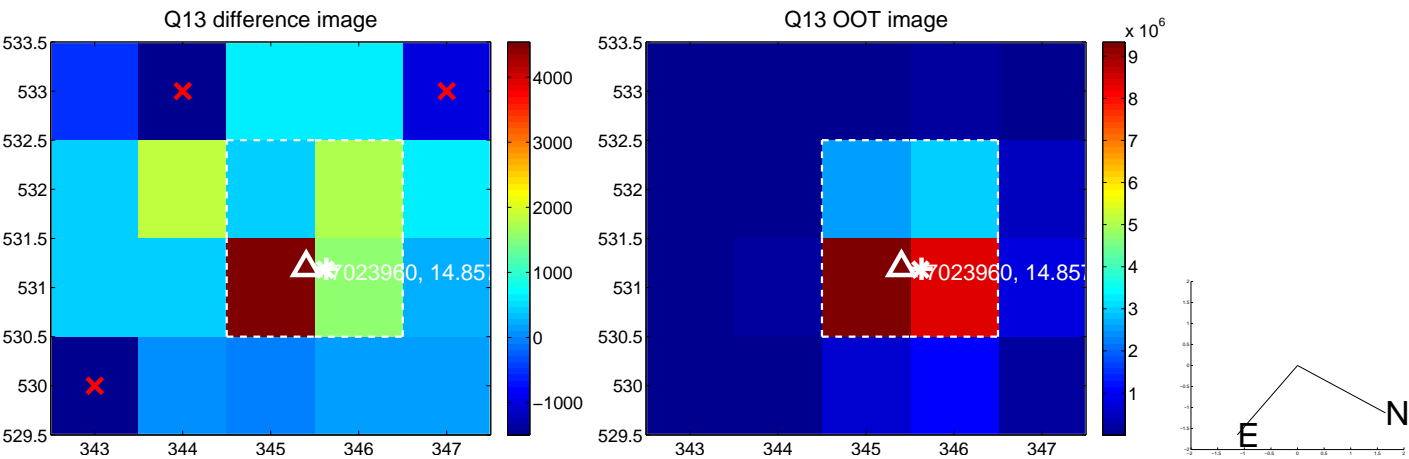
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



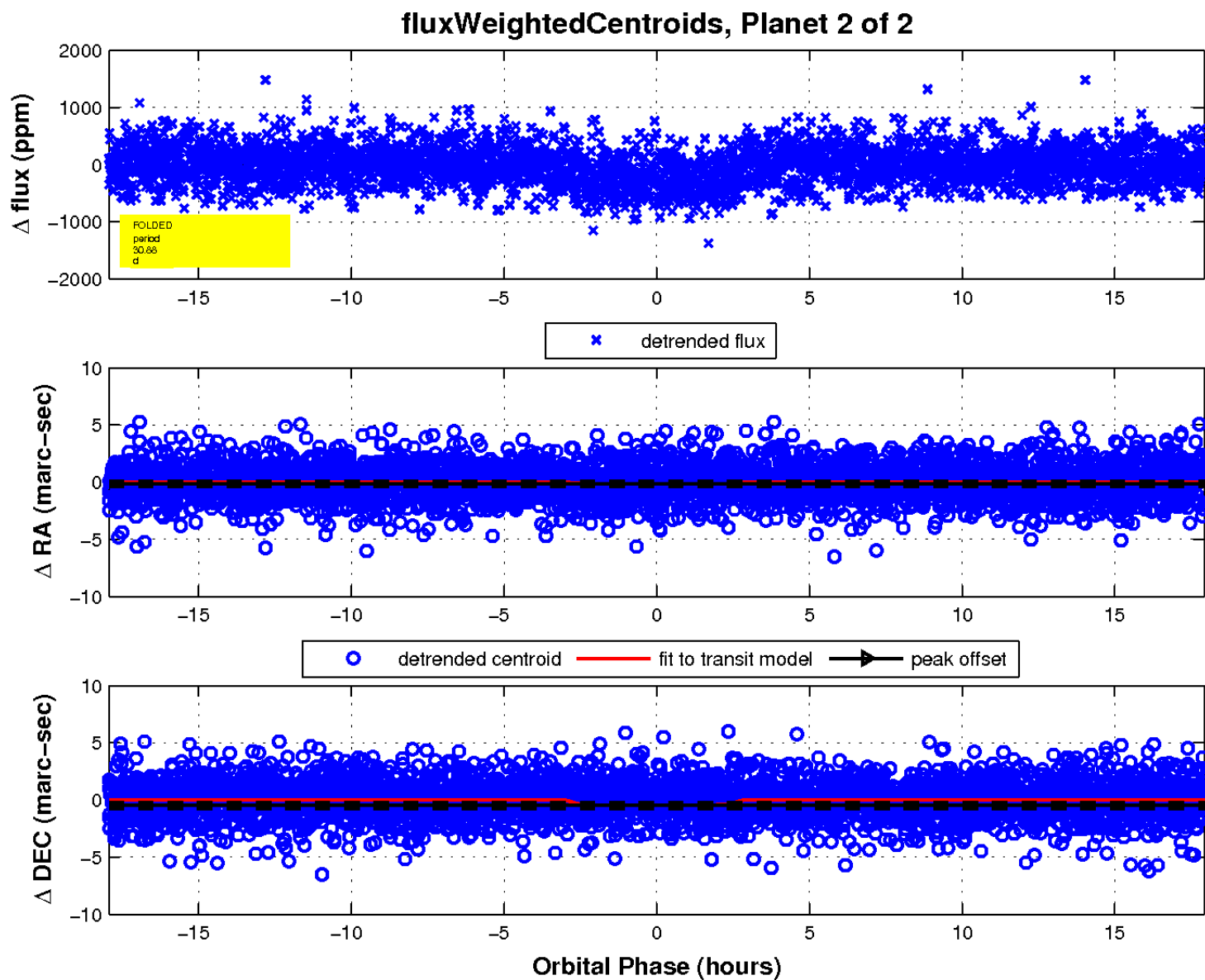
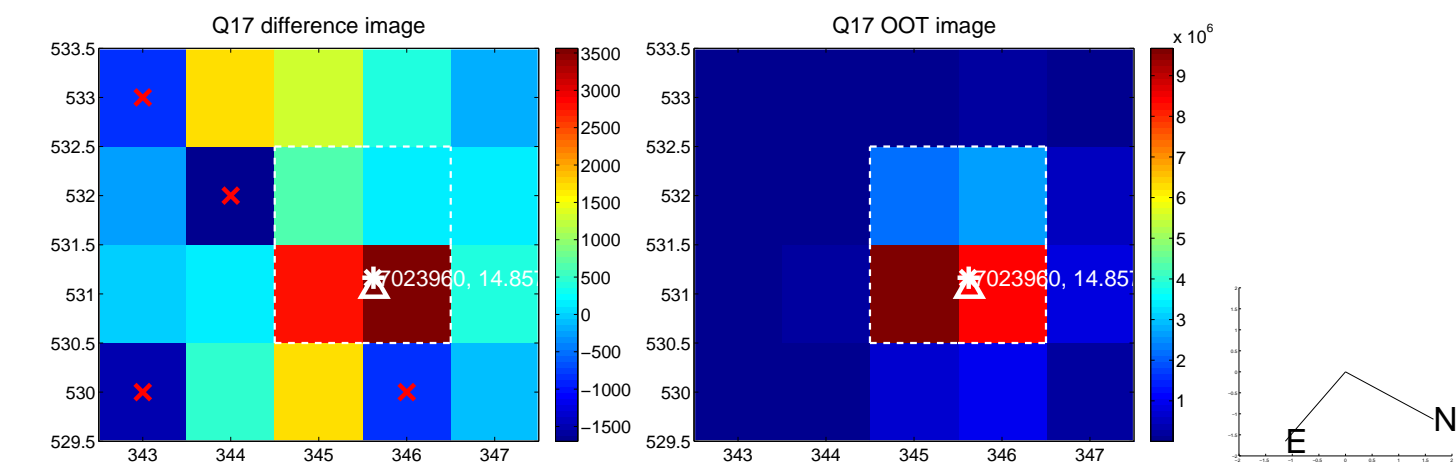
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination

